A STREET & SMITH PUBLICATION

ASTOUNDING

REG. U. S. PAT. OFF.

Science-fiction

25 CENTS

NOVEMBER 1945

THE MULE

BY

ISAAC ASIMOV

...e was attractive! Sure, his manners were nice! Sure, he was a grand dancer! But, after all, there's one thing* a girl simply won't put up with.

There's nothing like a case of halitosis* (unpleasant breath) to put you in the social dog-house or to cool off a romance. The worst of it is you, yourself, may not know when your breath is that way. Why risk needless offense when Listerine Antiseptic provides such a quick and wholly delightful precaution?

Simply rinse the mouth with Listerine Antiseptic morning and night, and before any date where you wish to be at your best. How it freshens! . . . what a feeling of assurance it gives!

While some cases of halitosis are of systemic origin, most cases, say a number of authorities, are due to the bacterial fermentation of tiny food particles clinging to mouth surfaces. Listerine Antiseptic halts such fermentation, then overcomes the odors fermentation causes. Almost immediately your breath is fresher, sweeter—less likely to offend.

LAMBERT PHARMACAL CO., *St. Louis, Mo.*

Before any date . . . LISTERINE ANTISEPTIC *for oral hygiene*

HOW'S YOUR { husband's / wife's } I.Q.?

This little quiz lets you decide if you're doing your part to help Uncle Sam hold prices down. No thinking person wants a price inflation like the cruel one we had during and after the last war. That's why we have rationing, ceiling prices and wage controls this time.

		HE	SHE
Does { he / she } buy rationed goods without points?	*Never*	☐	☐
	Occasionally	☐	☐
	Often	☐	☐
Does { he / she } pay Black Market prices, forget about ceilings?	*Never*	☐	☐
	Occasionally	☐	☐
	Often	☐	☐
Does { he / she } buy a lot of things you don't really need?	*Never*	☐	☐
	Occasionally	☐	☐
	Often	☐	☐
Does { he / she } want to cash in a War Bond now and then?	*Never*	☐	☐
	Occasionally	☐	☐
	Often	☐	☐
Does { he / she } grab the first things back on the market— *when you could do without them a little longer?*	*Never*	☐	☐
	Occasionally	☐	☐
	Often	☐	☐
Does { he / she } believe in spending while the money's coming in easy, *laugh at you for trying to save up for a rainy day?*	*Never*	☐	☐
	Occasionally	☐	☐
	Often	☐	☐

HOW TO SCORE

Never counts 10, *Occasionally* 5, *Often* 0

If your husband's score is:

50 or Over—He's a wonder—hang on to him!

10-30—He's pretty good—steer him a little!

0-10—Get busy, lady—take him in hand!

If your wife's score is:

50 or Over—She's an angel. KISS her!

10-30—A word from you might be in order!

0-10—Only *one* thing to do. SPANK HER!

ONE PERSON CAN START IT!

You give inflation a boost

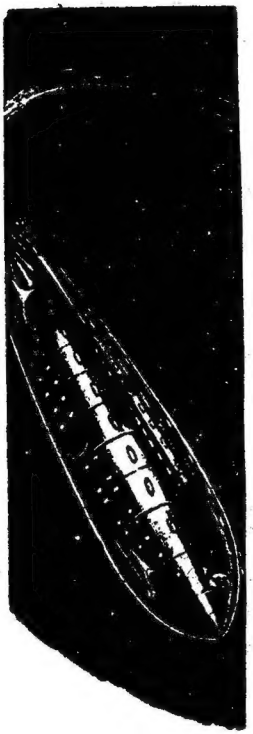
—when you buy anything you can do without

—when you buy above ceiling or without giving up stamps (Black Market!)

—when you ask more money for your services or the goods you sell.

Save your money. Buy and hold all the War Bonds you can afford—to pay for the war and protect your own future. Keep up your insurance.

A United States War message prepared by the War Advertising Council; approved by the Office of War Information; and contributed by this magazine in cooperation with the Magazine Publishers of America



ASTOUNDING SCIENCE FICTION

Reg. U. S. Pat. Off.

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Illustrations by Kramer, Orban and Williams

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$2.50 per Year in U.S.A. Printed in [redacted]16 the U. S. A. 25c per Copy

NEXT ISSUE ON SALE NOVEMBER 20, 1945

Atomic Age

There's a considerable lapse between the time Astounding goes through make-up and the time it appears on the newstands, as you are well aware. We are not, nor have we tried to be, a news magazine. This time it made a difference, of course; not knowing beforehand when the news would be released made us a little behind the times for a change.

The atomic bomb fell, and the war was, of course, ended. During the weeks immediately following that first atomic bomb, the science-fictioneers were suddenly recognized by their neighbors as not quite such wild-eyed dreamers as they had been thought, and in many soul-satisfying cases became the neighborhood experts.

Perhaps they've been able to do some good—give the people near them, who had no intellectual forewarning of what was coming, some idea of what it means. I recommend, as most salutary little lessons, the stories "Nerves", "Blowups Happen" and "Solution Unsatisfactory"—particularly the latter. It is of some interest that, at the moment, there is considerable agitation toward the idea of a world peace force, a United Nations set-up, using the atomic bomb as a weapon to enforce peace. The precise proposal made by "Solution Unsatisfactory".

It might work as a stopgap, and, at the moment, all we can hope for is a stopgap. The troubles to come have their roots in two factors, factors already quite evident in the world today.

> People do not realize civilization, the civilization we have been born into, lived in, and been indoctrinated with, died on July 16, 1945, and that the Death Notice was published to the world on August 6, 1945.
>
> The second factor is this: it is a basic characteristic of people that they refuse to accept change when it arrives.

On that latter point, which is, of course the most important, you can readily observe by the various newspapers and magazines that the Socialists go on being socialists, and see in the atomic bomb and its consequences the opportunity to spread and enforce socialism. The Com-

munists see in it the final proof of the necessity of being communist. The Anarchists naturally see it as the perfect way of obtaining the annihilation of all government. And, of course, the reactionary sees it as the way we can finally teach those blasted revolutionaries to behave themselves.

People simply go on trying to be just what they were before, with the same old viewpoints, the same demands, the same prejudices and intolerances. Each sees the atomic bomb only as a way of enforcing more violently his own particular will.

The natural result is that they are trying very hard to patch up the old civilization. It won't work, of course. The chicken has been beheaded; it still runs squawking across the world, acting very much alive, and not yet knowing it is dead. But you can't sew the head back on, no matter how hard you try. You can't simply outlaw the atomic bomb, and expect, thus, to thrust it back into the limbo of undiscovered things.

Civilization—the civilization of Big Power balances, of war and peace and bad international manners, of intolerance and hates, of grinding poverty and useless luxury —is dead. We are in the interregnum now, the chaos of moving our effects, our ideas and our hopes from a blasted edifice into a new structure. If we can make it in one move, we are an extremely wise, sane, and fortunate race. Probably we will require about three to six moves, from one unusable structure of world order to another before we find one that can work.

Each time we move—as in moving from one house to another—we will leave behind a few more things that we find we don't need, can't use, or were even responsible for the ills we knew in the old place.

The interregnum is beginning now, and we do not have a Hari Seldon to predict the ways in which socio-political psychology will work out. What structure the new culture will have, we can't imagine, because we know too little of what atomic powers can be made to do. It's conceivable that we might discover, in a period of a few brief weeks, the secret of the force-wall —something that can establish an absolutely impenetrable barrier. In that case, rather minor modifications of our culture would be possible.

If we do not—and I do not expect it—cities are impossible. At least until such time as the human race has learned to get along without intolerance, without hatred, and without their inevitable concomitant—vigorous, even violent, proselytizing.

What the world most needs is a breathing spell long enough to permit the peoples of the world to absorb the basic facts that we of science-fiction have at least a fair appreciation of. Too many people see the atomic bomb as simply a Bigger and Better, New-Type Bomb. There is only one appropriate name for the atomic weapon: The Doomsday Bomb. Nothing known to man can stand against its

(*Continued on page 98*)

The Mule

by ISAAC ASIMOV Part I

***First** of two parts of Asimov's first serial of the Foundation —and of the one factor that even Hari Sheldon could not predict—could not defend the Foundation against. The defenses were based on human psychology;* The Mule was a mutant!

Illustrated by Orban

I.

Bayta's first sight of Haven was entirely the contrary of spectacular. Her husband pointed it out—a dull star lost in the emptiness of the Galaxy's edge. It was past the last sparse clusters, to where straggling points of light gleamed lonely. And even among these it was poor and inconspicuous.

Toran was quite aware that as the earliest prelude to married life, the Red Dwarf lacked impressiveness and his lips curled self-consciously, "I know, Bay— It isn't exactly a proper change, is it? I mean from the Foundation, to this."

"A horrible change, Toran. I should never have married you."

And when his face looked momentarily hurt, before he caught himself, she said with her special "cozy" tone, "All right, silly. Now let your lower lip droop and give me that special dying duck look—the

one just before you're supposed to bury your head on my shoulder, while I stroke your hair full of static electricity. You were fishing for some drivel, weren't you? You were expecting me to say 'I'd be happy anywhere with you, Toran!' or 'The interstellar depths themselves would be home, my sweet, were you but with me!' Now you admit it."

She pointed a finger at him and snatched it away an instant before his teeth closed upon it.

He said, "If I surrender, and admit you're right, will you prepare dinner?"

She nodded contentedly. He smiled, and just looked at her.

She wasn't beautiful on the grand scale to others—he admitted that—even if everybody did look twice. Her hair was dark and glossy, though straight, her mouth a bit wide—but her meticulous, close-textured eyebrows separated a white, unlined forehead from the warmest mahogany eyes ever filled with smiles.

And behind a very sturdily-built and staunchly-defended facade of practical, unromantic, hard-headedness towards life, there was just that little pool of softness that would never show if you poked for it, but could be reached if you knew just how—and never let on that you were looking for it.

Toran adjusted the controls unnecessarily and decided to relax. He was one interstellar jump, and then several milli-microparsecs "on the straight" before manipulation by hand was necessary. He leaned over backwards to look into the storeroom, where Bayta was juggling appropriate containers.

There was quite a bit of smugness about his attitude towards Bayta—the satisfied awe that marks the triumph of someone who has been hovering at the edge of an inferiority complex for three years.

After all he was a provincial—and not merely a provincial, but the son of a renegade Trader. And she was of the Foundation itself, —and not merely that, but she could trace her ancestry back to Mallow.

And with all that, a tiny quiver underneath. To take her back to Haven, with its rock-world and cave-cities was bad enough. To have her face the traditional hostility of Trader for Foundationer —nomad for city dweller—was worse.

Still— After supper, the last jump!

Haven was an angry crimson blaze, and the second planet was a ruddy patch of light with atmosphere-blurred rim and a half-sphere of darkness. Bayta leaned over the large view-table with its spidering of crisscross lines that centered Haven II neatly.

She said gravely. "I wish I had met your father first. If he takes a dislike to me—"

"Then," said Toran matter-of-factly, "you would be the first pretty girl to inspire *that* in him. Before he lost his arm and stopped roving around the Galaxy, he—Well, if you ask him about it, he'll talk to you about it till your ears

wear down to a nubbin. After a while I got to thinking that he was embroidering; because he never told the same story twice the same way—"

Haven II was rushing up at them now. The landlocked sea wheeled ponderously below them, slate-gray in the lowering dimness and lost to sight, here and there, among the wispy clouds. Mountains jutted raggedly along the coast.

The sea became wrinkled with nearness and, as it veered off past the horizon just at the end, there was one vanishing glimpse of shore-hugging ice fields.

Toran grunted under the fierce deceleration, "Is your suit locked?"

Bayta's plump face was round and ruddy in the incasing sponge-foam of the internally-heated, skin-clinging costume.

The ship lowered crunchingly on the open field just short of the lifting of the plateau.

They climbed out awkwardly into the solid darkness of the outer-galactic night, and Bayta gasped as the sudden cold bit, and the thin wind swirled emptily. Toran seized her elbow and nudged her into an awkward run over the smooth, packed ground towards the sparking of artificial light in the distance.

The advancing guards met them halfway, and after a whispered exchange of words, they were taken onward. The wind and the cold disappeared when the gate of rock opened and then closed behind them. The warm interior, white with wall-light, was filled with an incongruous humming bustle. Men looked up from their desks, and Toran produced documents.

They were waved onward after a short glance and Toran whispered to his wife, "Dad must have fixed up the preliminaries. The usual lapse here is about five hours."

They burst into the open and Bayta said suddenly, "Oh, *my*—"

The cave city was in daylight—the white daylight of a young sun. Not that there was a sun, of course. What should have been the sky was lost in the unfocused glow of an over-all brilliance. And the warm air was properly thick and fragrant with greenery.

Bayta said, "Why, Toran, it's beautiful."

Toran grinned with anxious delight. "Well, now, Bay, it isn't like anything on the Foundation, of course, but it's the biggest city on Haven II—twenty thousand people, you know—and you'll get to like it. No amusement palaces, I'm afraid, but no secret police either."

"Oh, Torie, it's just like a toy city. It's all white and pink—and so clean."

"Well—" Toran looked at the city with her. The houses were two stories high for the most part, and of the smooth veined rock indigenous to the region. The spires of the Foundation were missing, and the colossal community houses of the Old Kingdoms—but the smallness was there and the individuality; a relic of personal initiative in a Galaxy of mass life.

He snapped to sudden attention.

"Bay— There's Dad! Right there —where I'm pointing, silly. Don't you see him?"

She did. It was just the impression of a large man, waving frantically, fingers spread wide as though groping wildly in air. The deep thunder of a drawn-out shout reached them. Bayta trailed her husband, rushing downwards over the close-cropped lawn. She caught sight of a smaller man, white-haired, almost lost to view behind the robust One-arm, who still waved and still shouted.

Toran cried over his shoulder, "It's my father's half brother. The one who's been to the Foundation. You know."

They met in the grass, laughing and incoherent, and Toran's father let out a final whoop for sheer joy. He hitched at his short jacket and adjusted the metal-chased belt that was his one concession to luxury.

His eyes shifted from one of the youngsters to the other, and then he said, a little out of breath, "You picked a rotten day to return home, boy!"

"What? Oh, it *is* Seldon's birthday, isn't it?"

"It is. I had to rent a car to make the trip here, and dragoon Randu to drive it. Not a public vehicle to be had at gun's point."

His eyes were on Bayta now, and didn't leave. He spoke to her more softly, "I have the crystal of you right here—and it's good, but I can see the fellow who took it was an amateur."

He had the small cube of transparency out of his jacket pocket and in the light the laughing little face within sprang to vivid colored life as a miniature Bayta.

"That one!" said Bayta. "Now I wonder why Toran should send that caricature. I'm surprised you let me come near you, sir."

"Are you now? Call me Fran. I'll have none of this fancy mess. For that, I think you can take my arm, and we'll go on to the car. Till now I never did think my boy knew what he was ever up to. I think I'll change that opinion. I think I'll *have* to change that opinion."

Toran said to his half uncle softly, "How is the old man these days? Does he still hound the women?"

Randu puckered up all over his face when he smiled, "When he can, Toran, when he can. There are times when he remembers that his next birthday will be his sixtieth, and that disheartens him. But he shouts it down, this evil thought, and then he is himself. He is a Trader of the ancient type. But you Toran. Where did you find such a pretty wife?"

The young man chuckled and linked arms, "Do you want a three years' history at a gasp, uncle?"

It was in the small living room of the home that Bayta struggled out of her traveling cloak and hood and shook her hair loose. She sat down, crossing her knees, and returned the appreciative stare of this large, ruddy man.

She said, "I know what you're trying to estimate, and I'll help you:

Age, twenty-four, height, five-four, weight, one-ten, educational specialty, history." She noticed that he always crooked his stand so as to hide the missing arm.

But now Fran leaned close and said, "Since you mention it—weight, one-twenty."

He laughed loudly at her flush. Then he said to the company in general, "You can always tell a woman's weight by her upper arm —with due experience, of course. Do you want a drink, Bay?"

"Among other things," she said, and they left together, while Toran busied himself at the book shelves to check for new additions.

Fran returned alone and said, "She'll be down later."

He lowered himself heavily into the large corner chair and placed his stiff-jointed left leg on the stool before it. The laughter had left his red face, and Toran turned to face him.

Fran said, "Well, you're home, boy, and I'm glad you are. I like your woman. She's no whining ninny."

"I married her," said Toran simply.

"Well, that's another thing altogether, boy." His eyes darkened, "It's a foolish way to tie up the future. In my longer life, and more experienced, I never did such a thing."

Randu interrupted from the corner where he stood quietly. "Now Franssart, what comparisons are you making? Till your crash landing six years ago you were never in one spot long enough to establish residence requirements for marriage. And since then, who would have you?"

The one-armed man jerked erect in his seat and replied hotly, "Many, you snowy dotard—"

Toran said with hasty tact, "It's largely a legal formality, Dad. The situation has its conveniences."

"Mostly for the woman" grumbled Fran.

"And even if so," argued Randu, "it's up to the boy to decide. Marriage is an old custom among the Foundationers."

"The Foundationers are not fit models for an honest Trader," smoldered Fran.

Toran broke in again, "My wife is a Foundationer." He looked from one to the other, and then said quietly, "She's coming."

The conversation took a general turn after the evening meal, which Fran had spiced with three tales of reminiscence composed of equal parts of blood, women, profits, and embroidery. The small televisor was on, and some classic drama was playing itself out in an unregarded whisper. Randu had hitched himself into a more comfortable position on the low couch and gazed past the slow smoke of his long pipe to where Bayta had knelt down upon the softness of the white fur mat brought back once long ago from a trade mission and now spread out only upon the most ceremonious occasions.

"You have studied history, my girl?" he asked, pleasantly.

Bayta nodded, "I was the despair

of my teachers, but I learned a bit, eventually."

"A citation for scholarship," put in Toran, smugly, "that's all!"

"And what did you learn?" proceeded Randu smoothly.

"Everything? Now?" laughed the girl.

The old man smiled gently, "Well then, what do you think of the Galactic situation?"

"I think," said Bayta, concisely, "that a Seldon crisis is pending—and that if it isn't then away with the Seldon plan altogether. It is a failure."

(*"Whew,"* muttered Fran, from his corner. "What a way to speak of Seldon." But he said nothing aloud.)

Randu sucked at his pipe speculatively, "Indeed? Why do you say that? I was to the Foundation, you know, in my younger days, and I, too, once thought great dramatic thoughts. But, now, why do you say that?"

"Well," Bayta's eyes misted with thought as she curled her bare toes into the white softness of the rug and nestled her little chin in one plump hand, "it seems to me that the whole essence of Seldon's plan was to create a world better than the ancient one of the Galactic Empire. It was falling apart, that world, three centuries ago, when Seldon first established the Foundation—and if history speaks truly, it was falling apart of the triple disease of inertia, despotism, and maldistribution of the goods of the universe."

Randu nodded slowly, while Toran gazed with proud, luminous eyes at his wife, and Fran in the corner clucked his tongue and carefully refilled his glass.

Bayta said, "If the story of Seldon is true, he foresaw the complete collapse of the Empire through his laws of psychohistory, and was able to predict the necessary thirty thousand years of barbarism before the establishment of a new Second Empire to restore civilization and culture to humanity. It was the whole aim of his life-work to set up such conditions as would insure a speedier rejuvenation."

The deep voice of Fran burst out, "And that's why he established the two Foundations, honor be to his name."

"And that's why he established the two Foundations," assented Bayta. "Our Foundation was a gathering of the scientists of the dying Empire intended to carry on the science and learning of man to new heights. And the Foundation was so situated in space and the historical environment was such that through the careful calculations of his genius, Seldon foresaw that in one thousand years, it would become a newer, greater Empire."

There was a reverent silence.

The girl said softly, "It's an old story. You all know it. For almost three centuries every human being of the Foundation has known it. But I thought it would be appropriate to go through it—just quickly. Today *is* Seldon's birthday, you know, and even if I *am* of the Foundation, and you are of Haven, we have that in common—"

She lit a cigarette slowly, and watched the glowing tip absently, "The laws of history are as absolute as the laws of physics, and if the probabilities of error are greater, it is only because history does not deal with as many humans as physics does atoms, so that individual variations count for more. Seldon predicted a series of crises through the thousand years of growth, each of which would force a new turning of our history into a pre-calculated path. It is those crises which direct us—and therefore a crisis must come now.

"Now!" she repeated, forcefully. "It's almost a century since the last one, and in that century, every vice of the Empire has been repeated in the Foundation. Inertia! Our ruling class knows one law; no change. Despotism! They know one rule: force. Maldistribution! They know one desire: to hold what is theirs."

"While others starve!" roared Fran suddenly with a mighty blow of his fist upon the arm of his chair. "Girl, your words are pearls. The fat guts on their moneybags ruin the Foundation, while the brave Traders hide their poverty on dregs of worlds like Haven. It's a disgrace to Seldon, a casting of dirt in his face, a spewing in his beard." He raised his arm high, and then his face lengthened, "If I had my other arm! If—once—they had listened to me!"

"Dad," said Toran, "take it easy."

"Take it easy. Take it easy," his father mimicked savagely. "We'll live here and die here forever—and you say, take it easy."

"That's our modern Lathan Devers," said Randu, gesturing with his pipe, "this Fran of ours. Devers died in the slave mines eighty years ago with your husband's great-grandfather, because he lacked wisdom and didn't lack heart—"

"Yes, and by the Galaxy, I'd do the same if I were he," swore Fran. "Devers was the greatest Trader in history—greater than the overblown windbag, Mallow, the Foundationers worship. If the cutthroats who lord the Foundation killed him because he loved justice, the greater the blood-debt owed them."

"Go on, girl," said Randu. "Go, or, surely, he'll talk all the night and rave all the next day."

"There's nothing to go on about," she said, with a sudden gloom. "There must be a crisis, but I don't know how to make one. The progressive forces on the Foundation are oppressed fearfully. You Traders may have the will, but you are hunted and disunited. If all the forces of good will in and out of the Foundation could combine—"

Fran's laugh was a raucous jeer, "Listen to her, Randu, listen to her. In and out of the Foundation, she says. Girl, girl, there's no hope in the flab-sides of the Foundation. Among them some hold the whip and the rest are whipped—dead whipped. Not enough spunk left in the whole rotten world to outface one good Trader."

Bayta's attempted interruptions broke feebly against the overwhelming wind.

Toran leaned over and put a hand over her mouth, "Dad," he said, coldly, "you've never been on the Foundation. You know nothing about it. I tell you that the underground there is brave and daring enough. I could tell you that Bayta was one of them—"

"All right, boy, no offense. Now, where's the cause for anger?" he was genuinely perturbed.

Toran drove on fervently, "The trouble with you, Dad, is that you've got a provincial outlook. You think because some hundred thousand Traders scurry into holes on an unwanted planet at the end of nowhere, that they're a great people. Of course, any tax collector from the Foundation that gets here never leaves again, but that's cheap heroism. What would you do if the Foundation sent a fleet?"

"We'd blast them," said Fran, sharply.

"And get blasted—with the balance in their favor. You're outnumbered, outarmed, outorganized—and as soon as the Foundation thinks it worth its while, you'll realize that. So you had better seek your allies—on the Foundation itself, if you can."

"Randu," said Fran, looking at his brother like a great, helpless bull.

Randu took his pipe away from his lips, "The boy's right, Fran. When you listen to the little thoughts deep inside you, you know he is. But they're uncomfortable thoughts, so you drown them out with that roar of yours. But they're still there. Toran, I'll tell you why I brought all this up."

He puffed thoughtfully awhile, then dipped his pipe into the neck of the tray, waited for the silent flash, and withdrew it clean. Slowly, he filled it again with precise tamps of his little finger.

He said, "Your little suggestion of Foundation's interest in us, Toran, is to the point. There have been two recent visits lately—for tax purposes. The disturbing point is that the second visitor was accompanied by a light patrol ship. They landed in Gleiar City—giving us the miss for a change—and they never lifted off again, naturally. But now they'll surely be back. Your father is aware of all this, Toran, he really is.

"Look at the stubborn rakehell. He knows Haven is in trouble, and he knows we're helpless, but he repeats his formulas. It warms and protects him. But once he's had his say, and roared his defiance, and feels he's discharged his duty as a man and a Bull Trader, why he's as reasonable as any of us."

"Any of who?" asked Bayta.

He smiled at her, "We've formed a little group, Bayta—just in our city. We haven't done anything, yet. We haven't even managed to contact the other cities yet, but it's a start."

"But towards what?"

Randu shook his head, "We don't know—yet. We hope for a miracle. We have decided that, as you say, a Seldon crisis must be at hand." He gestured widely upwards. "The Galaxy is full of the chips and splinters of the broken Empire.

The generals swarm. Do you suppose the time may come when one will grow bold."

Bayta considered, and shook her head decisively, so that the long straight hair with the single inward curl at the end swirled about her ears, "No, not a chance. There's not one of those generals who doesn't know that an attack on the Foundation is suicide. Bel Riose of the old Empire was a better man than any of them, and he attacked with the resources of a galaxy, and couldn't win against the Seldon Plan. Is there one general that doesn't know that?"

"But what if we spur them on?"

"Into where? Into an atomic furnace? With what could you possibly spur them?"

"Well, there is one—a new one. In this past year or two, there has come word of a strange man whom they call the Mule."

"The Mule?" She considered. "Ever hear of him, Torie?"

Toran shook his head. She said, "What about him?"

"I don't know. But he wins victories at, they say, impossible odds. The rumors may be exaggerated, but it would be interesting, in any case, to become acquainted with him. Not every man with sufficient ability and sufficient ambition would believe in Hari Seldon and his laws of psychohistory. We could encourage that disbelief. He might attack."

"And the Foundation would win."

"Yes—but not necessarily easily. It might be a crisis, and we could take advantage of such a crisis to force a compromise with the despots of the Foundation. At the worst, they would forget us long enough to enable us to plan farther."

"What do you think, Torie?"

Toran smiled feebly and pulled at a loose brown curl that fell over one eye. "The way he describes it, it can't hurt, But who is the Mule? What do you know of him, Randu?"

"Nothing yet. For that, we could use you, Toran. And your wife, if she's willing. We've talked of this, your father and I. We've talked of this thoroughly."

"In what way, Randu? What do you want of us?" The young man cast a quick inquisitive look at his wife.

"Have you had a honeymoon?"

"Well . . . yes . . . if you can call the trip from the Foundation a honeymoon."

"How about a better one on Kalgan. It's semitropical—beaches—water sports—bird hunting—quite the vacation spot. It's about seven thousand parsecs in—not too far."

"What's on Kalgan?"

"The Mule! His men, at least. He took it last month, and without a battle, though Kalgan's warlord broadcast a threat to blow the planet to ionic dust before giving it up."

"Where's the warlord now?"

"He isn't," said Randu, with a shrug. "What do you say?"

"But what are we to do?"

"I don't know. Fran and I are old; we're provincial. The Traders of Haven are all essentially provin-

cial. Even you say so. Our trading is of a very restricted sort, and we're not the Galaxy roamers our ancestors were. Shut up, Fran! But you two know the Galaxy. Bayta, especially, speaks with a nice Foundation accent. We merely wish whatever you can find out. If you can make contact . . . but we wouldn't expect that. Suppose you two think it over. You can meet our entire group if you wish . . . oh, not before next week. You ought to have some time to catch your breath."

There was a pause and then Fran roared, "Who wants another drink? I mean, besides me."

II.

Captain Han Pritcher was unused to the luxury of his surroundings and by no means impressed. As a general thing, he discouraged self-analysis and all forms of philosophy and metaphysics not directly connected with his work.

It helped.

His work consisted largely of what the War Department called "intelligence," the sophisticates, "espionage," and the romanticists, "spy stuff." And, unfortunately, despite the frothy shrillness of the televisors, "intelligence," "espionage," and "spy stuff" are at best a sordid business of routine betrayal and bad faith. It is excused by society since it is in the "interest of the State," but since philosophy seemed always to lead Captain Pritcher to the conclusion that even in that holy interest, society is much

more easily soothed than one's own conscience—he discouraged philosophy.

And now, in the luxury of the mayor's anteroom, his thoughts turned inward despite himself.

Men had been promoted over his head continuously, though of lesser ability—that much was admitted. He had withstood an eternal rain of black marks and official reprimands, and survived it. And stubbornly he had held to his own way in the firm belief that insubordination in that same holy "interest of the State" would yet be recognized for the service it was.

So here he was in the anteroom of the mayor—with five soldiers as a respectful guard, and probably a court-martial awaiting him.

The heavy, marble doors rolled apart smoothly, silently, revealing satiny walls, a red plastic carpeting, and two more marble doors, metal-inlaid, within. Two officials in the straight-lined costume of three centuries back, stepped out, and called:

"An audience to Captain Han Pritcher of Information."

They stepped back with a ceremonious bow as the captain started forward. His escort stopped at the outer door, and he entered the inner alone.

On the other side of the doors, in a large room strangely simple, behind a large desk strangely angular, sat a small man, almost lost in the immensity.

Mayor Indbur—successively the third of that name—was the grandson of the first Indbur, who had been brutal and capable; and who had exhibited the first quality in spectacular fashion by his manner of seizing power, and the latter by the skill with which he put an end to the last farcical remnants of free election and the even greater skill with which he maintained a relatively peaceful rule.

Mayor Indbur was also the son of the second Indbur, who was the first Mayor of the Foundation to succeed to his post by right of birth—and who was only half his father, for he was merely brutal.

So Mayor Indbur was the third of the name and the second to succeed by right of birth, and he was the least of the three, for he was neither brutal nor capable—but merely an excellent bookkeeper born wrong.

Indbur the Third was a peculiar combination of ersatz characteristics to all but himself.

To him, a stilted geometric love of arrangement was "system," an indefatigable and feverish interest in the pettiest facets of day-to-day bureaucracy was "industry," indecision when right was "caution," and blind stubbornness when wrong, "determination."

And withal, he wasted no money, killed no man needlessly, and meant extremely well.

If Captain Pritcher's gloomy thoughts ran along these lines as he remained respectfully in place before the large desk, the wooden arrangement of his features yielded no insight into the fact. He neither coughed, shifted weight, nor shuf-

fled his feet until the thin face of the mayor lifted slowly as the busy stylus ceased in its task of marginal notations, and a sheet of close-printed paper was lifted from one neat stack and placed upon another neat stack.

Mayor Indbur clasped his hands carefully before him, deliberately refraining from disturbing the careful arrangement of desk accessories.

He said, in acknowledgment, "Captain Han Pritcher of Information."

And Captain Pritcher in strict obedience to protocol bent one knee nearly to the ground and bowed his head until he heard the words of release.

"Arise, Captain Pritcher!"

The mayor said with an air of warm sympathy, "You are here, Captain Pritcher, because of certain disciplinary action taken against yourself by your superior officer. The papers concerning such action have come, in the ordinary course of events, to my notice, and since no event in the Foundation is of disinterest to me, I took the trouble to ask for further information on your case. You are not, I hope, surprised."

Captain Pritcher said unemotionally, "Excellence, no. Your justice is proverbial."

"Is it? Is it?" His tone was pleased, and the tinted contact lenses he wore caught the light in a manner that imparted a hard, dry gleam to his eyes. Meticulously, he fanned out a series of metal-bound folders before him. The parchment sheets within crackled sharply as he turned them, his long finger following down the line as he spoke.

"I have your record here, captain—complete. You are forty-three and have been an Officer of the Armed Forces for seventeen years. You were born in Loris, of Anacreonian parents, no serious childhood diseases, an attack of myo . . . well that's of no importance . . . education, pre-military, at the Academy of Sciences, major, hyper-engines, academic standing . . . hm-m-m, very good, you are to be congratulated . . . entered the Army as Under-Officer on the one hundred second day of the 293rd year of the Foundation Era."

He lifted his eyes momentarily as he shifted the first folder, and opened the second.

"You see," he said, "in my administration, nothing is left to chance. Order! System!"

He lifted a pink, scented jelly-globule to his lips. It was his one vice, and but dolingly indulged in. Witness the fact that the mayor's desk lacked that almost-inevitable atom-flash for the disposal of dead tobacco. For the mayor did not smoke.

Nor, as a matter of course, did his visitors.

The mayor's voice droned on, methodically, slurringly, mumblingly—now and then interspersed with whispered comments of equally mild and equally ineffectual commendation or reproof.

Slowly, he replaced the folders as originally, in a single neat pile.

"Well, captain," he said, briskly, "your record is unusual. Your

ability is outstanding, it would seem, and your services valuable beyond question. I note that you have been wounded in the line of duty twice, and that you have been awarded the Order of Merit for bravery beyond the call of duty. Those are facts not lightly to be minimized."

Captain Pritcher's expressionless face did not soften. He remained stiffly erect. Protocol required that a subject honored by an audience with the mayor not sit down—a point perhaps needlessly reinforced by the fact that only one chair existed in the room, the one underneath the mayor. Protocol further required no statements other than those needed to answer a direct question.

The mayor's eyes bore down hard upon the soldier and his voice grew pointed and heavy, "However, you have not been promoted in ten years, and your superiors report, over and over again, of the unbending stubbornness of your character. You are reported to be chronically insubordinate, incapable of maintaining a correct attitude towards superior officers, apparently uninterested in maintaining frictionless relationships with your colleagues, and an incurable troublemaker, besides. How do you explain that, captain?"

"Excellence, I do what seems right to me. My deeds on behalf of the State, and my wounds in that cause bear witness that what seems right to me is also in the interest of the State."

"A soldierly statement, captain, but a dangerous doctrine. More of that, later. Specifically, you are charged with refusing an assignment three times in the face of orders signed by my legal delegates. What have you to say to that?"

"Excellence, the assignment lacks significance in a critical time, where matters of first importance are being ignored."

"Ah, and who tells you these matters you speak of are of the first importance at all, and if they are, who tells you further that they are ignored?"

"Excellence, these things are quite evident to me. My experience and my knowledge of events—the value of neither of which my superiors deny—make it plain."

"But, my good captain, are you blind that you do not see that by arrogating to yourself the right to determine Intelligence policy, you usurp the duties of your superior?"

"Excellence, my duty is primarily to the State, and not to my superior."

"Fallacious, for your superior has his superior, and that superior is myself, and I am the State. But come, you shall have no cause to complain of this justice of mine that you say is proverbial. State in your own words the nature of the breach of discipline that has brought all this on."

"Excellence, in the last year and a half I have been engaged in living the life of a retired merchant mariner upon the world of Kalgan. My instructions were to direct Foundation activity upon the planet,

perfect an organization to act as check upon the warlord of Kalgan, particularly as regards his foreign policy."

"This is known to me. Continue!"

"Excellence, my reports have continually stressed the strategic positions of Kalgan and the systems it controls. I have reported on the ambition of the warlord, his resources, his determination to extend his domain and his essential friendliness—or, perhaps, neutrality—towards the Foundation."

"I have read your reports thoroughly. Continue!"

"Excellence, I returned two months ago. At that time, there was no sign of impending war; no sign of anything but an almost superfluity of ability to repel any conceivable attack. One month ago, an unknown soldier of fortune, took Kalgan without a fight. The man who was once warlord of Kalgan is apparently no longer alive. Men do not speak of treason—they speak only of the power and genius of this strange condottiere—this Mule."

"This who?" the mayor leaned forward, and looked offended.

"Excellence, he is known as the Mule. He is spoken of little, in a factual sense, but I have gathered the scraps and fragments of knowledge and winnowed out the most probable of them. He is apparently a man of neither birth nor standing. His father, unknown. His mother, dead in childbirth. His upbringing, that of a vagabond. His education, that of the tramp worlds, and the backwash alleys of space. He has no name other than that of the Mule, a name reportedly applied by himself to himself, and signifying, by popular explanation, his immense physical strength, and stubbornness of purpose."

"What is his military strength, captain? Never mind his physique."

"Excellence, men speak of huge fleets, but in this they may be influenced by the strange fall of Kalgan. The territory he controls is not large, though its exact limits are not capable of definite determination. Nevertheless, this man must be investigated."

"Hm-m-m. So! So!" The mayor fell into a reverie, and slowly, with twenty-four strokes of his stylus drew six squares in hexagonal arrangement upon the blank top sheet of a pad, which he tore off, folded neatly in three parts and slipped into the waste-paper slot at his right hand. It slid towards a clean and silent atomic disintegration.

"Now then, tell me, captain, what is the alternative? You have told me what 'must' be investigated. What have you been *ordered* to investigate?"

"Excellence, there is a rat hole in space that, it seems does not pay its taxes."

"Ah, and is that all? You are not aware, and have not been told, that these men who do not pay their taxes, are descendants of the wild Traders of our early days—anarchists, rebels, social maniacs who claim Foundation ancestry and deride Foundation culture. You

are not aware, and have not been told, that this rat hole in space, is not one, but many; that these rat holes are in greater number than we know; that these rat holes conspire together, one with the other, and all with the criminal elements that still exist throughout Foundation territory. Even here, captain, even here!"

The mayor's momentary fire subsided quickly. "You are not aware, captain?"

"Excellence, I have been told all this. But as servant of the State, I must serve faithfully—and he serves most faithfully who serves Truth. Whatever the political implications of these dregs of the ancient Traders—the warlords who have inherited the splinters of the old Empire have the power. The Traders have neither arms nor resources. They have not even unity. I am not a tax collector to be sent on a child's errand."

"Captain Pritcher, you are a soldier, and count guns. It is a failing to be allowed you up to the point where it involves disobedience to myself. Take care. My justice is not simply weakness. Captain, it has already been proven that the generals of the Imperial Age and the warlords of the present age are equally impotent against us. Seldon's science which predicts the course of the Foundation is based, not on individual heroism, as you seem to believe, but on the social and economic trends of history. We have passed successfully through four crises already, have we not?"

"Excellence, we have. Yet Seldon's science is known—only to Seldon. We ourselves have but faith. In the first three crises, as I have been carefully taught, the Foundation was led by wise leaders who foresaw the nature of the crises and took the proper precautions. Otherwise—who can say?"

"Yes, captain, but you omit the fourth crisis. Come, captain, we had no leadership worthy of the name then, and we faced the cleverest opponent, the heaviest armor, the strongest force of all. Yet we won by the inevitability of history."

"Excellence, that is true. But this history you mention became inevitable only after we had fought desperately for over a year. The inevitable victory we won cost us half a thousand ships and half a million men. Excellence, Seldon's plan helps those who help themselves."

Mayor Indbur frowned and grew suddenly tired of his patient exposition. It occurred to him that there was a fallacy in condescension, since it was mistaken for permission to argue eternally; to grow contentious; to wallow in dialectic.

He said, stiffly, "Nevertheless, captain, Seldon guarantees victory over the warlords, and I cannot, in these busy times, indulge in a dispersal of effort. These Traders you dismiss are Foundation-derived. A war with them would be a civil war. Seldon's plan makes no guarantee there for us—since they *and* we are Foundation. So they must be brought to heel. You have your orders."

"Excellence—".

"You have been asked no question, captain. You have your orders. You will obey those orders. Further argument of any sort with myself or those representing myself will be considered treason. You are excused."

Captain Han Pritcher knelt once more, then left with slow, backward steps.

Mayor Indbur, third of his name, and second mayor of Foundation history to be so by right of birth, recovered his equilibrium, and lifted another sheet of paper from the neat stack at his left. It was a report on the saving of funds due to the reduction of the quantity of metal-foam edging on the uniforms of the police force. Mayor Indbur crossed out a superfluous comma, corrected a misspelling, made three marginal notations, and placed it upon the neat stack at his right. He lifted another sheet of paper from the neat stack at his left—

Captain Han Pritcher of Information found a Personal Capsule waiting for him when he returned to barracks. It contained orders, terse and redly underlined with a stamped "URGENT" across it, and the whole initialed with a precise, capital "I".

Captain Han Pritcher was ordered to the "rebel world called Haven" in the strongest terms.

Captain Han Pritcher, alone in his light one-man speedster, set his course quietly and calmly for Kalgan. He slept that night the sleep of a successfully stubborn man.

III.

If, from a distance of seven thousand parsecs, the fall of Kalgan to the armies of the Mule had produced reverberations that had excited the curiosity of an old Trader, the apprehension of a dogged captain, and the anoyance of a meticulous mayor—to those on Kalgan itself, it produced nothing and excited no one. It is the invariable lesson to humanity that distance in time, and in space as well, lends focus. It is not recorded, incidentally, that the lesson has ever been permanently learned.

Kalgan was—Kalgan. It alone of all that quadrant of the Galaxy seemed not to know that the Empire had fallen, that the Stannells no longer ruled, that greatness had departed, and peace had disappeared.

Kalgan was the luxury world. With the edifice of mankind crumbling, it maintained its integrity as a producer of pleasure, a buyer of gold and a seller of leisure.

It escaped the harsher vicissitudes of history, for what conqueror would destroy or even seriously damage a world so full of the ready cash that would buy immunity.

Yet even Kalgan had finally become the headquarters of a warlord and its softness had been tempered to the exigencies of war.

Its tamed jungles, its mildly modeled shores, and its garishly glamorous cities echoed to the march of imported mercenaries and impressed citizens. The worlds of its province had been armed and its money invested in battleships

rather than bribes for the first time in its history. Its ruler proved beyond doubt that he was determined to defend what was his and eager to seize what was others.

He was a great one of the Galaxy, a war and peace maker, a builder of Empire, an establisher of dynasty.

And an unknown with a ridiculous nickname had taken him—and his arms—and his budding Empire—and had not even fought a battle.

So Kalgan was as before, and its uniformed citizens hurried back to their older life, while the foreign professionals of war merged easily into the newer bands that descended.

Again as always, there were the elaborate luxury hunts for the cultivated animal life of the jungles that never took human life; and the speedster bird-chases in the air above, that was fatal only to the Great Birds.

In the cities, the escapers of the Galaxy could take their varieties of pleasure to suit their purse, from the ethereal sky-palaces of spectacle and fantasy that opened their doors to the masses at the jingle of half a credit, to the unmarked, unnoted haunts to which only those of great wealth were of the cognoscenti.

To the vast flood, Toran and Bayta added not even a trickle. They registered their ship in the huge common hangar on the East Peninsula, and gravitated to that compromise of the middle-classes, the Inland Sea—where the pleasures were yet legal, and even respectable, and the crowds not yet beyond endurance.

Bayta wore dark glasses against the light, and a thin, white robe against the heat. Warm-tinted arms, scarcely the goldener for the sun, clasped her knees to her, and she stared with firm, abstracted gaze at the length of her husband's outstretched body—almost shimmering in the brilliance of white sun-splendor.

"Don't overdo it," she had said at first, but Toran was of a dying-red star. Despite three years of the Foundation, sunlight was a luxury, and for four days now his skin, treated beforehand for ray resistance, had not felt the harshness of clothing, except for the brief shorts.

Bayta huddled close to him on the sand and they spoke in whispers.

Toran's voice was gloomy, as it drifted upwards from a relaxed face, "No, I admit we're nowhere. But where is he? Who is he? This mad world says nothing of him. Perhaps he doesn't exist."

"He exists," replied Bayta, with lips that didn't move. "He's clever, that's all. And your uncle is right. He's a man we could use—if there's time."

A short pause. Toran whispered, "Know what I've been doing, Bay? I'm just daydreaming myself into a sun-stupor. Things figure themselves out so neatly—so sweetly." His voice nearly trailed off, then returned, "Remember the way Dr. Amann talked back at college, Bay. The Foundation can never lose, but that does not mean the *rulers* of the

Foundation can't. Didn't the real history of the Foundation begin when Salvor Hardin kicked out the Encyclopedists and took over the planet Terminus as the first mayor? And then in the next century, didn't Hober Mallow gain power by methods almost as drastic? That's twice the *rulers* were defeated, so it can be done. So why not by us."

"It's the oldest argument in the books, Torie? What a waste of good reverie."

"Is it? Follow it out. What's Haven? Isn't it part of the Foundation? It's simply part of the external proletariat, so to speak. If we become top dog, it's still the Foundation winning, and only the current rulers losing."

"Lots of difference between 'we can' and 'we will.' You're just jabbering."

Toran squirmed, "Nuts, Bay, you're just in one of your sour, green moods. What do you want to spoil my fun for? I'll just go to sleep if you don't mind."

But Bayta was craning her head, and suddenly—quite a *non sequitur*—she giggled, and removed her glasses to look down the beach with only her palm shading her eyes.

Toran looked up, then lifted and twisted his shoulders to follow her glance.

Apparently, she was watching a spindly figure, feet in air, who teetered on his hands for the amusement of a haphazard crowd. It was one of the swarming acrobatic beggars of the shore, whose supple joints bent and snapped for the sake of the thrown coins.

A beach guard was motioning him on his way and with a surprising one-handed balance, the clown brought a thumb to his nose in an upside-down gesture. The guard advanced threateningly and reeled backward with a foot in his stomach. The clown righted himself without interrupting the motion of the initial kick and was away, while the frothing guard was held off by a thoroughly unsympathetic crowd.

The clown made his way raggedly down the beach. He brushed past many, hesitated often, stopped nowhere. The original crowd had dispersed. The guard had departed.

"He's a queer fellow," said Bayta, with amusement, and Toran agreed indifferently. The clown was close enough now to be seen clearly. His thin face drew together in front into a nose of generous planes and fleshy tip that seemed all but prehensible. His long, lean limbs and spidery body, accentuated by his costume moved easily and with grace, but with just a suggestion of having been thrown together at random.

To look was to smile.

The clown seemed suddenly aware of their regard, for he stopped after he had passed, and, with a sharp turn, approached. His large, brown eyes fastened upon Bayta.

She found herself disconcerted.

The clown smiled, but it only saddened his beaked face, and when he spoke it was with the soft, elaborate phrasing of the Central Sectors.

"Were I to use the wits the good

Spirit gave me," he said, "then I would say this lady cannot exist—for what sane man would hold a dream to be reality. Yet rather would I not be sane and lend belief to charmed, enchanted eyes."

Bayta's own eyes opened wide. She said, "Wow!"

Toran laughed, "Oh, you enchantress. Go ahead, Bay, that deserves a five-credit piece. Let him have it."

But the clown was forward with a jump, "No, my lady, mistake me not. I spoke for money not at all, but for bright eyes and sweet face."

"Well, *thanks*," then, to Toran, "Golly, you think the sun's in his eyes?"

"Yet not alone for eyes and face," babbled the clown, as his words hurled past each other in heightened frenzy, "but also for a mind, clear and sturdy—and kind as well."

Toran rose to his feet, reached for the white robe he had crooked his arm about for four days, and slipped into it. "Now, bud," he said, "suppose you tell me what you want and stop annoying the lady."

The clown fell back a frightened step, his meager body cringing, "Now, sure I meant no harm. I am a stranger here, and it's been said I am of addled wits; yet there is something in a face that I can read. Behind this lady's fairness, there is a heart that's kind, and that would help me in my trouble for all I speak so boldly."

"Will five credits cure your trouble?" said Toran, dryly, and held out the coin.

But the clown did not move to take it, and Bayta said, "Let me talk to him, Torie." She added swiftly, and in an undertone, "There's no use being annoyed at his silly way of talking. That's just his dialect; and our speech is probably as strange to him."

She said, "What is your trouble? You're not worried about the guard, are you? He won't bother you."

"Oh, no, not he. He's but a windlet that blows the dust about my ankles. There is another that I flee, and he is a storm that sweeps the worlds aside and throws them plunging at each other. A week ago, I ran away, have slept in city streets, and hid in city crowds. I've looked in many faces for help in need. I find it here." He repeated the last phrase in softer, anxious

tones, and his large eyes were troubled, "I find it here."

"Now," said Bayta, reasonably, "I would like to help, but really, friend, I'm no protection against a world-sweeping storm. To be truthful about it, I could use—"

There was an uplifted, powerful voice that bore down upon them.

"Now, then, you mud-spawned rascal—"

It was the beach guard, with a fire-red face, and snarling mouth, that approached at a run. He pointed with his low-power stun pistol.

"Hold him you two. Don't let him get away." His heavy hand fell upon the clown's thin shoulder, so that a whimper was squeezed out of him.

Toran said, "What's he done?"

"What's he done? What's he done? Well, now, that's good!" The guard reached inside the dangling pocket attached to his belt, and removed a purple handkerchief, with which he mopped his bare neck. He said with relish, "I'll tell you what he's done. He's run away. The word's all over Kalgan and I would have recognized him before this if he had been on his feet instead of on his hawkface top." And he rattled his prey in a fierce good humor.

Bayta said, with a smile, "Now where did he escape from, sir?"

The guard raised his voice. A crowd was gathering, pop-eyed and jabbering, and with the increase of audience, the guard's sense of importance increased in direct ratio.

"Where did he escape from?" he declaimed in high sarcasm. "Why, I suppose you've heard of the Mule, now."

All jabbering stopped, and Bayta felt a sudden iciness trickle down into her stomach. The clown had eyes only for her—he still quivered in the guard's brawny grasp.

"And who," continued the guard heavily, "would this infernal ragged piece be, but his lordship's own court fool who's run away." He jarred his captive with a massive shake, "Do you admit it, fool?"

There was only white fear for answer, and the soundless sibilance of Bayta's voice close to Toran's ear.

Toran stepped forward to the guard in friendly fashion, "Now, my man, suppose you take your hand away for just a while. This entertainer you hold has been dancing for us and has not yet danced out his fee."

"Here!" The guard's voice rose in sudden concern. "There's a reward—"

"You'll have it, if you can prove he's the man you want. Suppose you withdraw till then. You know that you're interfering with a guest, which could be serious for you."

"But you're interfering with his lordship and that *will* be serious for you." He shook the clown once again, "Return the man's fee, carrion."

Toran's hand moved quickly and the guard's stun pistol was wrenched away with half a finger nearly following it. The guard howled his pain and rage. Toran

shoved him violently aside, and the clown, unhanded, scuttled behind him.

The crowd, whose fringes were now lost to the eye, paid little attention to the latest development. There was among them a craning of necks, and a centrifugal motion as if many had decided to increase their distance from the center of activity.

Then there was a bustle, and a rough order in the distance. A corridor formed itself and two men strode through, electric whips in careless readiness. Upon each purple blouse was designed an angular shaft of lightning with a splitting planet underneath.

A dark giant, in lieutenant's uniform followed them; dark of skin, and hair, and scowl.

The dark man spoke with the dangerous softness that meant he had little need of shouting to enforce his whims. He said, "Are you the man who notified us?"

The guard was still holding his wrenched hand, and with a pain-distorted face mumbled, "I claim the reward, your mightiness, and I accuse that man—"

"You'll get your reward," said the lieutenant, without looking at him. He motioned curtly to his men, "Take him."

Toran felt the clown tearing at his robe with a maddened grip.

He raised his voice and kept it from shaking, "I'm sorry, lieutenant; this man is mine."

The soldiers took the statement without blinking. One raised his whip casually, but the lieutenant's snapped order brought it down.

His dark mightiness swung forward and planted his square body before Toran, "Who are you?"

And the answer rang out, "A citizen of the Foundation."

It worked—with the crowd, at any rate. The pent-up silence broke into an intense hum. The Mule's name might excite fear, but it was, after all a new name, and scarcely stuck as deeply in the vitals as the old one of the Foundation—that had destroyed the Empire—and the fear of which ruled a quadrant of the Galaxy with ruthless despotism.

The lieutenant kept face. He said, "Are you aware of the identity of the man behind you?"

"I have been told he's a runaway from the court of your leader, but my only sure knowledge is that he is a friend of mine. You'll need firm proof of his identity to take him."

There was high-pitched sighs from the crowd, but the lieutenant let it pass. "Have you your papers of Foundation citizenship with you?"

"At my ship."

"You realize that your actions are illegal? I can have you shot."

"Undoubtedly. But then you would have shot a Foundation citizen and it is quite likely that your body would be sent to the Foundation — quartered — as part compensation. It's been done by other warlords."

The lieutenant wet his lips. The statement was true.

He said, "Your name?"

Toran followed up his advantage,

"I will answer further questions at my ship. You can get the cell number at the Hangar; it is registered under the name 'Bayta'."

"You won't give up the runaway?"

"To the Mule, perhaps. Send your master!"

The conversation had degenerated to a whisper and the lieutenant turned sharply away.

"Disperse the crowd!" he said to his men, with suppressed ferocity.

The electric whips rose and fell. There were shrieks and a vast surge of separation and flight.

Toran interrupted his reverie only once on their way back to the Hangar. He said, almost to himself, "Galaxy, Bay, what a time I had! I was so scared—"

"Yes," she said, with a voice that still shook, and eyes that still showed something akin to worship, "it was quite out of character."

"Well, I still don't know what happened. I just got up there with a stun pistol that I wasn't even sure I knew how to use, and talked back to him. I don't know why I did it."

He looked across the aisle of the short-run air vessel that was carrying them out of the beach area, to the seat on which the Mule's clown scrunched up in sleep, and added distastefully, "It was the hardest thing I've ever done."

The lieutenant stood respectfully before the colonel of the garrison, and the colonel looked at him and said, "Well done. Your part's over now."

But the lieutenant did not retire immediately. He said darkly, "The Mule has lost face before a mob, sir. It will be necessary to undertake disciplinary action to restore proper atmosphere of respect."

"Those measures have already been taken."

The lieutenant half-turned, then, almost with resentment. "I'm willing to agree, sir, that orders are orders, but standing before that man with his stun pistol and swallowing his insolence whole, was the hardest thing I've ever done."

IV.

The "hangar" on Kalgan is an institution peculiar unto itself, born of the need for the disposition of the vast number of ships brought in by the visitors from abroad, and the simultaneous and consequent vast need for living accommodations for the same. The original bright one who had thought of the obvious solution had quickly become a millionaire. His heirs—by birth or finance—were easily among the richest on Kalgan.

The "hangar" spreads fatly over square miles of territory, and "hangar" does not describe it at all sufficiently. It is essentially a hotel —for ships. The traveler pays in advance and his ship is awarded a berth from which it can take off into space at any desired moment. The visitor then lives in his ship as always. The ordinary hotel services such as the replacement of food and

medical supplies at special rates, simple servicing of the ship itself, special intra-Kalgan transportation for a nominal sum are to be had, of course.

As a result, the visitor combines hangar space and hotel bill into one, at a saving. The owners sell temporary use of ground space at ample profits. The government collects huge taxes. Everyone has fun. Nobody loses. Simple!

The man who made his way down the shadow-borders of the wide corridors that connected the multitudinous wings of the "hangar" had in the past speculated on the novelty and usefulness of the system described above, but these were reflections for idle moments—distinctly unsuitable at present.

The ships hulked in their height and breadth down the long lines of carefully aligned cells, and the man discarded line after line. He was an expert at what he was doing now—and if his preliminary study of the hangar registry had failed to give specific information beyond the doubtful indication of a specific wing—one containing hundreds of ships—his specialized knowledge could winnow those hundreds into one.

There was the ghost of a sigh in the silence, as the man stopped and faded down one of the lines; a crawling insect beneath the notice of the arrogant metal monsters that rested there.

Here and there the sparkling of light from a porthole would indicate the presence of an early returner from the organized pleasures to simpler—or more private—pleasures of his own.

The man halted, and would have smiled if he ever smiled. Certainly the convolutions of his brain performed the mental equivalent of a smile.

The ship he stopped at was sleek and obviously fast. The peculiarity of its design was what he wanted. It was not a usual model—and these days most of the ships of this quadrant of the Galaxy either imitated Foundation design or were built by Foundation technicians. But this was special. This was a Foundation ship—if only because of the tiny bulges in the skin that were the nodes of the protective screen that only a Foundation ship could possess. There were other indications, too.

The man felt no hesitation.

The electronic barrier strung across the line of the ships as a concession to privacy on the part of the management was not at all important to him. It parted easily, and without activating the alarm, at the use of the very special neutralizing force he had at his disposal.

So the first knowledge within the ship of the intruder without was the casual and almost friendly signal of the muted buzzer in the ship's living room that was the result of a palm placed over the little photocell just one side of the main air lock.

And while that successful search went on, Toran and Bayta felt only the most precarious security within the steel walls of the *Bayta*. The

Mule's clown, who now revealed that within his narrow compass of body, he held the lordly name of Magnifico Giganticus, sat hunched over the table and gobbled at the food set before him.

His sad, brown eyes lifted from his meal only to follow Bayta's movements in the combined kitchen and larder where he ate.

"The thanks of a weak one are of but little value," he muttered, "but you have them, for truly, in this past week, little but scraps have come my way—and for all my body is small, yet is my appetite unseemly great."

"Well, then, eat!" said Bayta, with a smile. "Don't waste your time on thanks. Isn't there a Central Galaxy proverb about gratitude, that I once heard."

"Truly there is, my lady. For a wise man, I have been told, once said 'Gratitude is best and most effective when it does not evaporate itself in empty phrases.' But alas, my lady, I am but a mass of empty phrases, it would seem. When my empty phrases pleased the Mule, it brought me a court dress, and a grand name—for, see you, it was originally simply Bobo, one that pleased him not—and then when my empty phrases pleased him not, it would bring upon my poor bones beatings and whippings."

Toran entered from the pilot room, "Nothing to do now but wait, Bay. I hope the Mule is capable of understanding that a Foundation ship is Foundation territory."

Magnifico Giganticus, once Bobo, opened his eyes wide and exclaimed, "How great is the Foundation before which even the cruel servants of the Mule tremble."

"Have you heard of the Foundation, too?" asked Bayta, with a little smile.

"And who has not?" Magnifico's voice was a mysterious whisper. "There are those who say it is a world of great magic, of fires that can consume planets, and secrets of mighty strength. They say that not the highest nobility of the Galaxy could achieve the honor and deference considered only the natural due of a simple man who could say 'I am a citizen of the Foundation,'—were he only a salvage miner of space, or a nothing like myself."

Bayta said, "Now, Magnifico, you'll never finish if you make speeches. Here, I'll get you a little flavored milk. It's good."

She placed a pitcher of it upon the table and motioned Toran out of the room.

"Torie, what are we going to do now—about him?" and she motioned towards the kitchen.

"How do you mean?"

"If the Mule comes, are we going to give him up?"

"Well, what else, Bay?" He sounded harassed, and the gesture with which he shoved back the moist curl upon his forehead testified to that.

He continued impatiently, "Before I came here I had a sort of vague idea that all we had to do was to ask for the Mule, and then get down to business—just business, you know, nothing definite."

"I know what you mean, Torie.

I wasn't much hoping to see the Mule myself, but I did think we could pick up *some* firsthand knowledge of the mess, and then pass it over to people who know a little more about this interstellar intrigue. I'm no story-book spy."

"You're not behind me, Bay." He folded his arms and frowned. "What a situation? You'd never know there *was* a person like the Mule, except for this last queer break. Do you suppose he'll come for his clown."

Bayta looked up at him, "I don't know that I want him to. I don't know what to say or do. Do you?"

The inner buzzer sounded with its intermittent burring noise. Bayta's lips moved wordlessly "The Mule!"

Magnifico was in the doorway, eyes wide, his voice a whimper, "The Mule?"

Toran murmured, "I've got to let them in."

A contact opened the air lock and the outer door closed behind the newcomer. The scanner showed only a single shadowed figure.

"It's only one person," said Toran, with open relief, and his voice was almost shaky as he bent toward the signal tube, "Who are you?"

"You'd better let me in and find out, hadn't you?" The words came thinly out the receiver.

"I'll inform you that this is a Foundation ship and consequently Foundation territory by international treaty.

"I know that."

"Come with your arms free, or I'll shoot. I'm well-armed."

"Done!"

Toran opened the inner door and closed contact on his blast pistol, thumb hovering over the pressure point. There was the sound of footsteps and then the door swung open, and Magnifico cried out, "It's not the Mule. It's but a man."

The "man" bowed to the clown somberly, "Very accurate. I'm not the Mule." He held his hands apart, "I'm not armed, and I come on a peaceful errand. You might relax and put the blast pistol away. Your hand isn't steady enough for my peace of mind."

"Who are you?" asked Toran, brusquely.

"I might ask *you* that," said the stranger, coolly, "since you're the one under false pretenses, not I."

"How so?"

"You're the one who claims to be a Foundation citizen when there's not an authorized Trader on the planet."

"That's not so. How would you know?"

"Because I *am* a Foundation citizen, and have my papers to prove it. Where are yours?"

"I think you'd better get out."

"I think not. If you know anything about Foundation methods, and despite your imposture, you might, you'd know that if I don't return alive to my ship at a specified time, there'll be a signal at the nearest Foundation headquarters—so I doubt if your weapons will have much effect, practically speaking."

There was an irresolute silence and then Bayta said, calmly, "Put the blaster away, Toran, and take him at face value. He sounds like the real thing."

"Thank you," said the stranger.

Toran put his gun on the chair beside him, "Suppose you explain all this now."

The stranger remained standing. He was long of bone and large of limb. His face consisted of hard flat planes and it was somehow evident that he never smiled. But his eyes lacked hardness.

He said, "News travels quickly, especially when it is apparently beyond belief. I don't suppose there's a person on Kalgan who doesn't know that the Mule's men were kicked in the teeth today by two tourists from the Foundation. I knew of the important details before evening, and, as I said, there are no Foundation tourists aside from myself on the planet. We know about those things."

"Who are the 'we'?"

"'We' are—'we'! Myself for one! I knew you were at the Hangar—you had been overheard to say so. I had my ways of checking the registry, and my ways of finding our ship."

He turned to Bayta suddenly, "You're from the Foundation—by birth, aren't you?"

"Am I?"

"You're a member of the democratic opposition—they call it 'the underground.' I don't remember your name, but I do the face. You got out only recently—and wouldn't have if you were more important."

Bayta shrugged, "You know a lot."

"I do. You escaped with a man. That one?"

"Does it matter what I say?"

"No. I merely want a thorough mutual understanding. I believe that the password during the week you left so hastily was 'Seldon, Hardin, and Freedom.' Porfirat Hart was your section leader."

"Where'd you get that?" Bayta was suddenly fierce. "Did the police get him?" Toran held her back, but she shook herself loose and advanced.

The man from the Foundation said quietly, "Nobody has him. It's just that the underground spreads widely and in queer places. I'm Captain Han Pritcher of Information, and I'm a section leader myself—never mind under what name."

He waited, then said, "No, you don't have to believe me. In our business it is better to overdo suspicion than the opposite. But I'd better get past the preliminaries."

"Yes," said Toran, "suppose you do."

"May I sit down? Thanks." Captain Pritcher swung a long leg across his knee and let an arm swing loose over the back of the chair. "I'll start out by saying that I don't know what all this is about—from your angle. You two aren't from the Foundation, but it's not a hard guess that you're from one of the independent Trading worlds. That doesn't bother me overmuch. But out of curiosity, what do you want with that fellow, that clown

you snatched to safety? You're risking your life to hold on to him."

"I can't tell you that."

"Hm-m-m. Well, I didn't think you would. But if you're waiting for the Mule himself to come behind a fanfarade of horns, drums, and electric organs—relax! The Mule doesn't work that way."

"What?" It came from both Toran and Bayta, and in the corner where Magnifico lurked with ears almost visibly expanded, there was a sudden joyful start.

"That's right. I've been trying to contact him myself, and doing a rather more thorough job of it than you two amateurs can. It won't work. The man makes no personal appearance, does not allow himself to be photographed or simulated, and is seen only by his most intimate associates."

"Is that supposed to explain your interest in us, captain?" questioned Toran.

"No. That clown is the key. That clown is one of the very few that *have* seen him. I want him. He may be the proof I need—and I need something, Galaxy knows—to awaken the Foundation."

"It needs awakening?" broke in Bayta with sudden sharpness. "Against what? And in what role do you act as alarm, that of rebel democrat or of secret police and provocateur?"

The captain's face set in its hard lines. "When the entire Foundation is threatened, Madame Revolutionary, both democrats and tyrants perish. Let us save the tyrants from a greater, that we may overthrow them in their turn."

"Who's the greater tyrant you speak of?" flared Bayta.

"The Mule! I know a bit about him, enough to have been my death several times over already, if I had moved less nimbly. Send the clown out of the room. This will require privacy."

"Magnifico," said Bayta, with a gesture, and the clown left without a sound.

The captain's voice was grave and intense, and low enough so that Toran and Bayta drew close.

He said, "The Mule is a shrewd operator—far too shrewd not to realize the advantage of the magnetism and glamour of personal leadership. If he gives that up, it's for a reason. That reason must be the fact that personal contact would reveal something that it is of overwhelming importance *not* to reveal."

He waved aside questions, and continued more quickly, "I went back to his birthplace for this, and questioned people who for their knowledge will not live long. Few enough are still alive. They remember the baby born thirty years before—the death of his mother—his strange youth. *The Mule is not a human being!*"

And his two listeners drew back in horror at the misty implications. Neither understood, fully or clearly, but the menace of the phrase was definite.

The captain continued, "He is a mutant, and obviously from his subsequent career, a highly successful one. I don't know his powers or

the exact extent to which he is what our thrillers would call a 'superman,' but the rise from nothing to the conqueror of Kalgan's warlord in two years is revealing. You see, don't you, the danger? Can a genetic accident of unpredictable biological properties be taken into account in the Seldon plan?"

Slowly, Bayta spoke, "I don't believe it. This is some sort of complicated trickery. Why didn't the Mule's men kill us when they could have, if he's a superman?"

"I told you that I don't know the extent of his mutation. He may not be ready, yet, for the Foundation, and it would be a sign of the greatest wisdom to resist provocation until ready. Suppose you let me speak to the clown."

The captain faced the trembling Magnifico, who obviously distrusted this huge, hard man who faced him.

The captain began slowly, "Have you seen the Mule with your own eyes?"

"I have but too well, respected sir. And felt the weight of his arm with my own body as well."

"I have no doubt of that. Can you describe him?"

"It is frightening to recall him, respected sir. He is a man of mighty frame. Against him, even you would be but a spindling. His hair is of a burning crimson, and with all my strength and weight I could not pull down his arm, once extended—not a hair's thickness." Magnifico's thinness seemed to collapse upon itself in a huddle of arms and legs. "Often, to amuse his generals or to amuse only himself, he would suspend me by one finger in my belt from a fearful height, while I chattered poetry. It was only after the twentieth verse that I was withdrawn, and each improvised and each a perfect rhyme, or else start over. He is a man of overpowering might, respected sir, and cruel in the use of his power—and his eyes, respected sir, no one sees."

"What? What's that last?"

"He wears spectacles, respected sir, of a curious nature. It is said that they are opaque and that he sees by a powerful magic that far transcends human powers. I have heard," and his voice was small and mysterious, "that to see his eyes is to see death; that he kills with his eyes, respected sir."

Magnifico's eyes wheeled quickly from one watching face to another. He quavered, "It is true. As I live, it is true."

Bayta drew a long breath, "Sounds like you're right, captain. Do you want to take over?"

"Well, let's look at the situation. You don't owe anything here? The hangar's barrier above is free?"

"I can leave any time."

"Then leave. The Mule may not wish to antagonize the Foundation, but he runs a frightful risk in letting Magnifico get away. It probably accounts for the hue and cry after the poor devil in the first place. So there may be ships waiting for you upstairs. If you're lost in space, who's to pin the crime."

"You're right," agreed Toran, bleakly.

"However, you've got a shield and you're probably speedier than anything they've got, so as soon as you're clear of the atmosphere make the circle in neutral to the other hemisphere, then just cut a track outwards at top acceleration."

"Yes," said Bayta coldly, "and when we are back on the Foundation, what then, captain?"

"Why, you are then co-operative citizens of Kalgan, are you not? I know nothing to the contrary, do I?"

Nothing was said. Toran turned to the controls. There was an imperceptible lurch.

It was when Toran had left Kalgan sufficiently far in the rear to attempt his first interstellar jump, that Captain Pritcher's face first creased slightly—for no ship of the Mule had in any way attempted to bar their leaving.

"Looks like he's letting us carry off Magnifico," said Toran. "Not so good for your story."

"Unless," corrected the captain, "he *wants* us to carry him off, in which case it's not so good for the Foundation."

It was after the last jump, when within neutral-flight distance of the Foundation, that the first ultra-wave news broadcast reached the ship.

And there was one news item barely mentioned. It seemed that a warlord—unidentified by the bored speaker—had made representations to the Foundation concerning the forceful abduction of a member of his court. The announcer went on to the sports news.

Captain Pritcher said icily, "He's one step ahead of us after all." Thoughtfully, he added, "He's ready for the Foundation, and he uses this as an excuse for action. It makes things more difficult for us. We will have to act before we are really ready."

V.

There was reason to the fact that the element known as "pure science" was the freest form of life on the Foundation. In a Galaxy where the predominance—and even the survival—of the Foundation still rested upon the superiority of its technology—even despite its large access of physical power in the last century and a half—a certain immunity adhered to The Scientist. He was needed, and he knew it.

Likewise, there was reason to the fact that Ebling Mis—only those who did not know him added his titles to his name—was the freest form of life in the "pure science" of the Foundation. In a world where science was respected, he was The Scientist—with capital letters

and no smile. He was needed, and he knew it.

And so it happened, that when others bent their knee, he refused and added loudly that his ancestors in their time bowed no knee to any stinking mayor. And in his ancestors' time, the mayor was elected anyhow, and kicked out at will, and that the only people that inherited anything by right of birth were the congenital idiots.

So it also happened, that when Ebling Mis decided to allow Indbur to honor him with an audience, he did not wait for the usual rigid line of command to pass his request up and the favored reply down, but, having thrown the less disreputable of his two formal jackets over his shoulders and pounded an odd hat of impossible design on one side of his head, and lit a forbidden cigar into the bargain, he barged past two ineffectually bleating guards and into the mayor's palace.

The first notice his excellence received of the intrusion was when from his garden he heard the gradually nearing uproar of expostulation and the answering bull-roar of inarticulate swearing.

Slowly, Indbur lay down his trowel; slowly, he stood up; and slowly, he frowned. For Indbur allowed himself a daily vacation from work, and for two hours in the early afternoon, weather permitting, he was in his garden. There in his garden, the blooms grew in squares and triangles, interlaced in a severe order of red and yellow, with little dashes of violet at the apices, and greenery bordering the whole in rigid lines. There in his garden, no one disturbed him—*no one!*

Indbur peeled off his soil-stained gloves as he advanced toward the little garden door.

Inevitably, he said, "What is the meaning of this?"

It is the precise question and the precise wording thereof that has been put to the atmosphere on such occasions by an incredible variety of men since humanity was invented. It is not recorded that it has ever been asked for any purpose other than dignified effect.

But the answer was literal this time, for Mis's body came plunging through with a bellow, and a shake of a fist at the ones who were still holding tatters of his cloak.

Indbur motioned them away with a solemn, displeased frown, and Mis bent to pick up his ruin of a hat, shake about a quarter of the gathered dirt off it. thrust it under his armpit and say:

"Look here, Indbur, those unprintable minions of yours will be charged for one good cloak. Lots of good wear left in this cloak." He puffed and wiped his forehead with just a trace of theatricality.

The mayor stood stiff with displeasure, and said haughtily from the peak of his five-foot-two, "It has not been brought to my attention, Mis, that you have requested an audience. You have certainly not been assigned one."

Ebling Mis looked down at his mayor with what was apparently shocked disbelief, "Ga-LAX-y, Ind-

bur, didn't you get my note yesterday? I handed it to a flunky in purple uniform day before. I would have handed it to you direct, but I know how you like formality."

"Formality!" Indbur turned up exasperated eyes. Then, strenuously, "Have you ever heard of proper organization? At all future times you are to submit your request for an audience, properly made out in triplicate, at the government office intended for the purpose. You are then to wait until the ordinary course of events brings you notification of the time of audience to be granted. You are then to appear, properly clothed—properly clothed, do you understand—and with proper respect, too. You may leave."

"What's wrong with my clothes?" demanded Mis, hotly. "Best cloak I had till those unprintable fiends got their claws on it. I'll leave just as soon as I deliver what I came to deliver. Ga-LAX-y, if it didn't involve a Seldon Crisis, I would leave right now."

"Seldon crisis!" Indbur exhibited first interest. Mis *was* a great psychologist—a democrat, boor, and rebel certainly, but a psychologist, too. In his uncertainty, the mayor even failed to put into words the inner pang that stabbed suddenly when Mis plucked a casual bloom, held it to his nostrils expectantly, then flipped it away with a wrinkled nose.

Indbur said coldly, "Would you follow me? This garden wasn't made for serious conversation."

He felt better in his built-up chair behind his large desk from which he could look down on the few hairs that quite ineffectually hid Mis's pink scalp-skin. He felt much better when Mis cast a series of automatic glances about him for a nonexistent chair and then remained standing in uneasy shifting fashion. He felt best of all when in response to a careful pressure of the correct contact, a liveried underling scurried in, bowed his way to the desk, and laid thereon a bulky, metal-bound volume.

"Now, in order," said Indbur, once more master of the situation, "to make this unauthorized interview as short as possible, make your statement in the fewest possible words."

Ebling Mis said unhurriedly, "You know what I'm doing these days?"

"I have your reports here," replied the mayor, with satisfaction, "together with authorized summaries of them. As I understand it, your investigations into the mathematics of psychohistory have been intended to duplicate Hari Seldon's work and, eventually, trace the projected course of future history, for the use of the Foundation."

"Exactly," said Mis, dryly. "When Seldon first established the Foundation, he was wise enough to include no psychologists among the scientists placed here—so that the Foundation has always worked blindly along the course of historical necessity. In the course of my researches, I have based a good

deal upon hints found at the Time Vault."

"I am aware of that, Mis. It is a waste of time to repeat."

"I'm not repeating," blared Mis, "because what I'm going to tell you isn't in any of those reports."

"How do you mean, not in the reports," said Indbur, stupidly, "How could—"

"Ga-LAX-y! Let me tell this my own way, you offensive little creature. Stop putting words into my mouth and questioning my every statement or I'll tramp out of here and let everything crumble around you. Remember, you unprintable fool, the Foundation will come through because it must, but if I walk out of here now—*you* won't."

Dashing his hat on the floor, so that clods of earth scattered, he sprang up the stairs of the dais on which the wide desk stood and shoving papers violently aside, sat down upon a corner of it.

Indbur thought frantically of summoning the guard, or using the built-in blasters of his desk. But Mis's face was glaring down upon him, and there was nothing to do but cringe the best face upon it.

"Dr. Mis," he began, with weak formality, "you must—"

"Shut up," said Mis, ferociously, "and listen. If this thing here," and his palm came down heavily on the metal of the bound data, "is a mess of my reports—throw it out. Any report I write goes up through some twenty-odd officials, gets to you, and then sort of winds down through twenty more. That's fine if there's nothing you don't want kept secret. Well, I've got something confidential here. It's so confidential, even the boys working for me haven't got wind of it. They did the work, of course, but each just a little unconnected piece—and I put it together. You know what the Time Vault is?"

Indbur nodded his head, but Mis went on with loud enjoyment of the situation, "Well, I'll tell you anyhow because I've been sort of imagining this unprintable situation for a Ga-LAX-y of a long time. I can read your mind, you puny fraud. You've got your hand right near a little knob that'll call in about five hundred or so armed men to finish me off, but you're afraid of what I know—you're afraid of a Seldon Crisis. Besides which, if you touch anything on your desk, I'll knock your unprintable head off before anyone gets here. You and your bandit father and pirate grandfather have been blood-sucking the Foundation long enough anyway."

"This is treason," gabbled Indbur.

"It certainly is," gloated Mis, "but what are you going to do about it? Let me tell you about the Time Vault. That Time Vault is what Hari Seldon placed here at the beginning to help us over the rough spots. For every crisis, Seldon has prepared a personal simulacrum to help—and explain. Four crises so far—four appearances. The first time he appeared at the height of the first crisis. The second time, he appeared at a moment just after the successful evolution of the second crisis. Our ancestors were

there to listen to him both times. At the third and fourth crises, he was ignored—probably because he was not needed, but recent investigations—*not* included in those reports you have—indicate that he appeared anyway, and at the proper times. Get it?"

He did not wait for any answer. His cigar, a tattered, dead ruin was finally disposed of, a new cigar groped for and lit. The smoke puffed out violently.

He said, "Officially I've been trying to rebuild the science of psychohistory. Well, no one man is going to do *that,* and it won't get done in any one century, either. But I've made advances in the more simple elements and I've been able to use it as an excuse to meddle with the Time Vault. What I *have* done, involves the determination, to a pretty fair kind of certainty, of the exact date of the next appearance of Hari Seldon. I can give you the exact day, in other words, that the coming Seldon Crisis, the fifth, will reach its climax."

"How far off?" demanded Indbur, tensely.

And Mis exploded his bomb with cheerful nonchalance, "Four months," he said. "Four unprintable months, less two days."

"Four months" said Indbur, with uncharacteristic vehemence. "Impossible."

"Impossible, my unprintable eye."

"Four months? Do you understand what that means. For a crisis to come to a head in four months would mean that it has been preparing for years."

"And why not? Is there a law of Nature that requires the process to mature in the full light of day?"

"But nothing impends. Nothing hangs over us." Indbur almost wrung his hands for anxiety. With a sudden spasmodic recrudescence of ferocity, he screamed, *"Will* you get off my desk and let me put it in order. How do you expect me to *think?"*

Mis, startled, lifted heavily and moved aside.

Indbur replaced objects in their appropriate niches with a feverish motion. He was speaking quickly, "You have no right to come here like this. If you had presented your theory—"

"It is not a *theory."*

"I say it *is* a theory. If you had presented it together with your evidence and arguments, in appropriate fashion, it would have gone to the Bureau of Historical Sciences. There it could have been properly treated, the resulting analyses submitted to me, and then, of course, proper action would have been taken. As it is, you've vexed me to no purpose. Ah, here it is."

He had a sheet of transparent, silvery paper in his hand which he shook at the bulbous psychologist beside him.

"This is a short summary I prepare myself—weekly—of foreign matters in progress. Listen—we have completed negotiations for a commercial treaty with Mores, continue negotiations for one with Lyonesse, sent delegation to some

celebration or other on Bonde, received some complaint or other from Kalgan and we've promised to look into it, protested some sharp trade practices in Asperta and they've promised to look into it—and so on and so on." The mayor's eyes swarmed down the list of coded notations, and then he carefully placed the sheet in its proper place in the proper folder in the proper pigeonhole.

"I tell you, Mis, there's not a thing there that breathes anything but order and peace—"

The door at the far, long end opened, and, in far too dramatically coincident a fashion to suggest anything but real life, a plainly-costumed notable stepped in.

Indbur half-rose. He had the curiously swirling sensation of unreality that comes upon those days when too much happens. After Mis' intrusion and wild fumings, there now came the equally improper, hence disturbing, intrusion unannounced, of his secretary, who at least knew the rules.

The secretary kneeled low.

Indbur said, sharply, "Well!"

The secretary addressed the floor, "Excellence, Captain Han Pritcher of Information, returning from Kalgan, in disobedience to your orders, has according to prior instructions—your order X20-513—been imprisoned, and awaits execution. Those accompanying him are being held for questioning. A full report has been filed."

Indbur, in agony, said, "A full report has been received. *Well!*"

"Excellence, Captain Pritcher has reported, vaguely, dangerous designs on the part of the new warlord of Kalgan. He has been given, according to prior instructions—your order X20-651—no formal hearing, but his remarks have been recorded and a full report filed."

Indbur screamed, "A full report has been received. *Well!*"

"Excellence, reports have within the quarter-hour been received from the salinnian frontier. Ships identified as Kalganian have been entering Foundation territory, unauthorized. The ships are armed. Fighting has occurred."

The secretary was bent nearly double. Indbur remained standing. Ebling Mis shook himself, clumped up to the secretary, and tapped him sharply on the shoulder.

"Here, you'd better have them release this Captain Pritcher, and have him sent here. Get out."

The secretary left, and Mis turned to the mayor, "Hadn't you better get the machinery moving, Indbur? Four months, you know?"

Indbur remained standing, glaze-eyed. Only one finger seemed alive—and it traced rapid jerky triangles on the smooth desk top before him.

When the twenty-seven independent Trading worlds, united only by their distrust of the mother planet of the Foundation, concert an assembly among themselves, and each is big with a pride grown of its smallness, hardened by its own insularity and embittered by eternal danger—there are preliminary negotiations to be overcome of a pettiness sufficiently staggering to heart-

sicken the most persevering.

It is not enough to fix in advance such details as methods of voting, type of representation—whether by world or by population. These are matters of involved political importance. It is not enough to fix matters of priority at the table, both council and dinner, those are matters of involved social importance.

It was above all necessary to choose the place of meeting—since that was a matter of overpoweringly provincialism. And in the end the devious routes of diplomacy led to the world of Radole, which some commentators had suggested at the start for logical reason of central position.

Radole was a small world—and, in military potential, perhaps the weakest of the twenty-seven. That, by the way, was another factor in the logic of the choice.

It was a ribbon world—of which the Galaxy boasts sufficient, but among which, the inhabited variety is a rarity. It was a world, in other words, where the two halves face the monotonous extremes of heat and cold, while the region of possible life is the birdling ribbon of the twilight zone.

Such a world invariably sounds uninviting to those who have not tried it, but there exist spots, strategically placed— And Radole City was located in such a one.

It spread along the soft slopes of the foothills before the hacked-out mountains that backed it along the rim of the cold hemisphere and held off the frightful ice. The warm, dry air of the sun-half spilled over, and from the mountains was piped the water—and between the two, Radole City became a continuous garden, swimming in the eternal morning of an eternal June.

Each house nestled among its flower garden, open to the fangless elements. Each garden was a horticultural forcing ground, where luxury plants grew in fantastic patterns for the sake of the foreign exchange they brought—until Radole had almost become a producing world, rather than a typical Trading world.

So, in its way, Radole City was a little point of softness and luxury on a horrible planet—a tiny scrap of Eden—and that, too, was a factor in the logic of the choice.

The strangers came from each of the twenty-six other Trading worlds: delegates, wives, secretaries, newsmen, ships, and crews —and Radole's population nearly doubled and Radole's resources strained themselves to the limit. One ate at will, and drank at will, and slept not at all.

Yet there were few among the roisterers who were not intensely aware that all that volume of the Galaxy burnt slowly in a sort of quiet, slumberous war. And of those who were aware, there were three classes. First, there were the many who knew little and were very confident—

Such as the young space pilot who wore the Haven cockade on the clasp of his cap, and who managed, in holding his glass before his eyes,

to catch those of the faintly smiling Radolian girl opposite. He was saying:

"We came right through the war-zone to get here—on purpose. We traveled about a light-minute or so, in neutral, right past Horleggor—"

"Horleggor?" broke in a long-legged native, who was playing host to that particular gathering. "That's where the Mule got the guts beat out of him last week, wasn't it?"

"Where'd you hear that the Mule got the guts beat out of him?" demanded the pilot, loftily.

"Foundation radio."

"Yeah? Well, the Mule's *got* Horleggor. We almost ran into a convoy of his ships, and that's where they were coming from. It isn't a gut-beating when you stay where you fought and the gut-beater leaves in a hurry."

Someone else said in a high, blurred voice, "Don't talk like that. Foundation always takes it on the chin for a while. You watch; just sit tight and watch. Ol' Foundation knows when to come back. And then—*pow!*" The thick voice concluded and was succeeded by a bleary grin.

"Anyway," said the pilot from Haven, after a short pause, "as I say, we saw the Mule's ships, and they looked pretty good, pretty good. I tell you what—they looked new."

"New?" said the native, thoughtfully. "They build them themselves?" He broke a leaf from an overhanging branch, sniffed delicately at it, then crunched it between his teeth, the bruised tissues bleeding greenly and diffusing a minty odor. He said, "You trying to tell me they beat Foundation ships with home-built jobs? Go on."

"We saw them, doc. And I can tell a ship from a comet, too, you know."

The native leaned close, "You know what I think. Listen, don't kid yourself. Wars don't just start by themselves, and we have a bunch of shrewd apples running things. They know what they're doing."

The well-unthirsted one said with sudden loudness, "You watch ol' Foundation. They wait for the last minute, then—*pow!*" He grinned with vacuously open mouth at the girl, who moved away from him.

The Radolian was saying, "For instance, old man, you think, maybe, that this Mule guy's running things. No-o-o." And he wagged a finger horizontally. "The way I hear it, and from pretty high up, mind you, he's our boy. We're paying him off, and we probably built those ships. Let's be realistic about it—we probably did. Sure, he can't beat the Foundation in the long run, but he can get them shaky, and when he does—*we get in.*"

The girl said, "Is that all you can talk about, Klev? The war? You make me tired."

The pilot from Haven said, in an access of gallantry, "Change the subject. Can't make the girls tired."

The bedewed one took up the refrain and banged a mug to the rhythm. The little groups of two that had formed broke up with giggles and swagger, and a few

similar groups of twos emerged from the sun-house in the background.

The conversation became more general, more varied, more meaningless—

Then there were those who knew a little more and were less confident.

Such as the one-armed Fran, whose large bulk represented Haven as official delegate, and who lived high in consequence, and cultivated new friendships—with women when he could and with men when he had to.

It was on the sun platform of the hilltop home, of one of these new friends, that he relaxed for the first of what eventually proved to be a total of two times while on Ravole. The new friend was Iwo Lyon, a kindred soul of Radole. Iwo's house was apart from the general cluster, apparently alone in a sea of floral perfume and insect chatter. The sun platform was a grassy strip of lawn set at a forty-five degree angle, and upon it, Fran stretched out and fairly sopped up sun.

He said, "Don't have anything like this on Haven."

Iwo replied, sleepily, "Ever seen the cold side. There's a spot twenty miles from here, where the oxygen runs like water."

"Go on."

"Fact."

"Well, I'll tell you, Iwo— In the old days, before my arm was chewed off, I knocked around, see —and you won't believe this, but"—

The story that followed lasted considerably, and Iwo didn't believe it.

Iwo said, through yawns, "They don't make them like in the old days, that's the truth."

"No, guess they don't. Well, now," Fran fired up, "don't say that. I told you about my son, didn't I? *He's* one of the old school, if you like. He'll make a great Trader, blast it. He's his old man up and down. Up and down, except that he gets married."

"You mean legal contract? With a girl?"

"That's right. Don't see the sense in it myself. They went to Kalgan for their honeymoon."

"Kalgan? *Kalgan?* When the Galaxy was this?"

Fran smiled broadly, and said with slow meaning, "Just before the Mule declared war on the Foundation."

"That so?"

Fran nodded and motioned Iwo closer with his head. He said, hoarsely, "In fact, I can tell you something, if you don't let it go any further. My boy was sent to Kalgan for a purpose. Now I wouldn't like to let it out, you know, just what the purpose was, naturally, but you look at the situation now, and I suppose you can make a pretty good guess. In any case, my boy was the man for the job. We Traders needed some sort of ruckus." He smiled, craftily. "It's here. I'm not saying how we did it, but—my boy went to Kalgan, and the Mule sent out his ships. My son!"

Iwo was duly impressed. He

grew confidential in his turn, "That's good. You know, they say we've got five hundred ships ready to pitch in on our own at the right time."

Fran said authoritatively, "More than that, maybe. This is real strategy. This is the kind I like." He clawed loudly at the skin of his abdomen. "But don't you forget that the Mule is a smart boy, too. What happened at Horleggor worries me."

"I heard he lost about ten ships."

"Sure, but he had a hundred more, and the Foundation had to get out. It's all to the good to have those tyrants beaten, but not as quickly as all that." He shook his head.

"The question I ask is where does the Mule get his ships? There's a widespread rumor we're making them for him."

"We? The Traders? Haven has the biggest ship factories anywhere in the independent worlds, and we haven't made one for anyone but ourselves. Do you suppose any world is building a fleet for the Mule on its own, without taking the precaution of united action? That's a . . . a fairy tale."

"Well, where does he get them?"

And Fran shrugged, "Makes them himself, I suppose. That worries me, too."

Fran blinked at the sun and curled his toes about the smooth wood of the polished foot-rest. Slowly, he fell asleep and the soft burr of his breathing mingled with the insect sibilance.

Lastly, there were the very few who knew considerable and were not confident at all.

Such as Randu, who on the fifth day of the all-Trader convention entered the Central Hall and found the two men he had asked to be there, waiting for him. The five hundred seats were empty—and were going to stay so.

Randu said quickly, almost before he sat down, "We three represent about half the military potential of the Independent Trading Worlds."

"Yes," said Mangin of Iss, "my colleague and I have already commented upon the fact."

"I am ready," said Randu, "to speak quickly and earnestly. I am not interested in bargaining or subtlety. Our position is radically in the worse."

"As a result of—" urged Ovall Gri of Mnemon.

"Of developments of the last hour. Please! From the beginning. First, our position is not of our doing, and but doubtfully of our control. Our original dealings were not with the Mule, but with several others; notably the ex-warlord of Kalgan, whom the Mule defeated at a most inconvenient time for us."

"Yes, but this Mule is a worthy substitute," said Mangin. "I do not cavil at details."

"You may when you know *all* the details." Randu leaned forward and placed his hands upon the table palms-up in an obvious gesture.

He said, "A month ago I sent

my nephew and my nephew's wife to Kalgan."

"Your nephew!" cried Ovall Gri, in surprise. "I did not know he was your nephew."

"With what purpose," asked Mangin, dryly. "This?" And his thumb drew an inclusive circle high in the air.

"No. If you mean the Mule's war on the Foundation, no. How could I aim so high. The young man knew nothing—neither of our organization nor of our aims. He was told I was a minor member of an intra-Haven patriotic society, and his function at Kalgan was nothing but that of an amateur observer. My motives were, I must admit, rather obscure. Mainly, I was curious about the Mule. He is a strange phenomenon—but that's a chewed cud; I'll not go into it. Secondly, it would make an interesting and educational training-project for a man who had experience with the Foundation and the Foundation underground and showed promise of future usefulness to us. You see—"

Ovall's long face fell into vertical lines as he showed his large teeth, "You must have been surprised at the outcome, then, since there is not a world among the Traders, I believe, that does not know that this nephew of yours abducted a Mule underling in the name of the Foundation and furnished the Mule with a *casus belli*. Galaxy, Randu, you spin romances. I find it hard to believe you had no hand in that.

Come, it was a skillful job."

Randu shook his white head, "Not of my doing. Nor, willfully, of my nephew's, who is now held prisoner at the Foundation, and may not live to see the completion of this so-skillful job. I have just heard from him. The Personal Capsule has been smuggled out somehow, come through the war zone, gone to Haven, and traveled from there to here. It has been a month on its travels."

"And?—"

Randu leaned a heavy head upon the heel of his palm and said, sadly, "I'm afraid we are cast for the same role that the one-time warlord of Kalgan played. The Mule is a mutant!"

There was a momentary qualm; a faint impression of quickened heartbeats. Randu might easily have imagined it.

When Mangin spoke, the evenness of his voice was unchanged, "How do you know?"

"Only because my nephew says so, but he was on Kalgan."

"What kind of a mutant? There are all kinds, you know."

Randu forced the rising impatience down, "All kinds of mutants, yes, Mangin. All kinds! But only one kind of Mule. What kind of a mutant would start as an unknown, assemble an army, establish, they say, a five-mile asteroid as original base, capture a planet, then a system, then a region—and then attack the Foundation, and *defeat* them at Horleggor. *And all in two or three years!*"

Ovall Gri shrugged, "So you think he'll beat the Foundation?"

"I don't know. Suppose he does?"

"Sorry. I can't go that far. You *don't* beat the Foundation. Look, there's not a new fact we have to go on except for the statements of a . . . well, of an inexperienced boy. Suppose we shelve it for a while. With all the Mule's victories, we weren't worried until now, and unless he goes a good deal further than he has, I see no reason to change that. Yes?"

Randu frowned and despaired at the cobwob texture of his argument. He said to both, "Have we yet made any contact with the Mule?"

"No." Both answered.

"It's true, though, that we've tried, isn't it? It's true that there's not much purpose to our meeting unless we do reach him, isn't it? It's true that so far there's been more drinking than thinking, and more wooing than doing—I quote from an editorial in today's Radole *Tribune*—and all because we can't reach the Mule. Gentlemen, we have nearly a thousand ships waiting to be thrown into the fight at the proper moment to seize control of the Foundation. I say we should change that. I say, throw those thousand onto the board now—*against the Mule.*"

"You mean for the Tyrant Indbur and the bloodsuckers of the Foundation?" demanded Mangin, with quiet venom.

Randu raised a weary hand, "Spare me the adjectives. Against the Mule, I say, and for I-don't-care-who."

Ovall Gri rose, "Randu, I'll have nothing to do with that. You present it to the full council tonight if you particularly hunger for political suicide."

He left without another word and Mangin followed silently, leaving Randu to drag out a lonely hour of endless, insoluble consideration.

At the full council that night, he said nothing.

But it was Ovall Gri who pushed into his room the next morning; an Ovall Gri only sketchily dressed and who had neither shaved nor combed his hair.

Randu stared at him over a yet-uncleared breakfast table with an astonishment sufficiently open and strenuous to cause him to drop his pipe.

Ovall said baldly, harshly. "Mnemon has been bombarded from space, by treacherous attack."

Randu's eyes narrowed, "The Foundation?"

"The Mule!" exploded Ovall. "The Mule!" His words raced, "It was unprovoked and deliberate. Most of our fleet had joined the international flotilla. The few left as Home Squadron were insufficient and were blown out of the sky. There have been no landings yet, and there may not be, for half the attackers are reported destroyed—but it is war—and I have come to ask how Haven stands on the matter."

"Haven, I am sure, will adhere to the spirit of the Charter of Federation. But, you see? He attacks us as well."

"This Mule is a madman. Can he defeat the universe?" He faltered and sat down to seize Randu's wrist, "Our few survivors have reported the Mule's poss . . . enemy's possession of a new weapon. An atomic-field depressor."

"A what?"

Ovall said, "Most of our ships were lost because their atomic weapons failed them. It could not have happened by either accident or sabotage. It must have been a weapon of the Mule. It didn't work perfectly; the effect was intermittent; there were ways to neutralize—my dispatches are not detailed. But you see that such a tool would change the nature of war and, possibly, make our entire fleet obsolete."

Randu felt an old, old man. His face sagged hopelessly, "I am afraid a monster is grown that will devour all of us. Yet we must fight him."

VII.

Ebling Mis' house in a not-so-pretentious neighborhood of Terminus City was well known to the intelligentsia, literati, and just-plain-well-read of the Foundation. Its notable characteristics depended, subjectively, upon the source material that was read. To a thoughtful biographer, it was the "symbolization of a retreat from a nonacademic reality," a society columnist gushed silkily at its "frightfully masculine atmosphere of careless disorder," a University Ph.D. called it brusquely, "bookish, but unorganized," a nonuniversity friend said, "good for a drink anytime

and you can put your feet on the sofa," and a breezy newsweekly broadcast, that went in for color, spoke of the "rocky, down-to-earth, no-nonsense living quarters of blaspheming, Leftish, balding Ebling Mis."

To Bayta, who thought for no audience but herself at the moment, and who had the advantage of first-hand information, it was merely sloppy.

Except for the first few days, her imprisonment had been a light burden. Far lighter, it seemed, than this half-hour wait in the psychologist's home—under secret observation, perhaps? She had been with Toran then, at least—

Perhaps she might have grown wearier of the strain, had not Magnifico's long nose drooped in a gesture that plainly showed his own far greater tension.

Magnifico's pipe-stem legs were folded up under a pointed, sagging chin, as if he were trying to huddle himself into disappearance, and Bayta's hand went out in a gentle and automatic gesture of reassurance. Magnifico winced, then smiled.

"Surely, my lady, it would seem that even yet my body denies the knowledge of my mind and expects of other's hands a blow."

"There's no need for worry, Magnifico. I'm with you, and I won't let anyone hurt you."

The clown's eyes sidled towards her, then drew away quickly "But they kept me away from you earlier —and from your kind husband— and, on my word, you may laugh, but I was lonely for missing friendship."

"I wouldn't laugh at that. I was, too."

The clown brightened, and he hugged his knees closer. He said, "You have not met this man who will see us?" It was a cautious question.

"No. But he is a famous man. I have seen him in the newcasts and heard quite a good deal of him. I think he's a good man, Magnifico, who means us no harm."

"Yes?" The clown stirred uneasily, "That may be, my lady, but he has questioned me before, and his manner is of an abruptness and loudness that bequivers me. He is full of strange words, so that the answers to his questions could not worm out of my throat. Almost, I might believe the romancer who once played on my ignorance with a tale that, at such moments, the heart lodged in the windpipe and prevented speech."

"But it's different now. We're two to his one, and he won't be able to frighten the both of us, will he?"

"No, my lady."

A door slammed somewheres, and the roaring of a voice entered the house. Just outside the room, it coagulated into words with a fierce, "Get the Ga-LAX-y out of here!" and two uniformed guards were momentarily visible through the opening door, in quick retreat.

Ebling Mis entered frowning, deposited a carefully wrapped bundle on the floor, and approached to

shake Bayta's hand with careless pressure. Bayta returned it vigorously, man-fashion. Mis did a double-take as he turned to the clown, and favored the girl with a longer look.

He said, "Married?"

"Yes. We went through the legal formalities."

Mis paused. Then, "Happy about it?"

"So far."

Mis shrugged, and turned again to Magnifico. He unwrapped the package, "Know what this is, boy?"

Magnifico fairly hurled himself out of his seat and caught the multi-keyed instrument. He fingered the myriad knobby contacts and threw a sudden back somersault of joy, to the imminent destruction of the nearby furniture.

He croaked, "A Visi-Sonor—and of a make to distil joy out of a dead man's heart." His long fingers caressed softly and slowly, pressing lightly on contacts with a rippling motion, resting momentarily on one key then another—and in the air before them there was a soft glowing rosiness, just inside the range of vision.

Ebling Mis said, "All right, boy, you said you could pound on one of those gadgets, and there's your chance. You'd better tune it, though. It's out of a museum." Then, in an aside to Bayta, "Near as I can make it, no one on the Foundation can make it talk right."

He leaned closer and said quickly, "The clown won't talk without you. Will you help?"

She nodded.

"Good!" he said. "His state of fear is almost fixed, and I doubt that his mental strength would possibly stand a psychic probe. If I'm to get anything out of him otherwise, he's got to feel absolutely at ease. You understand?"

She nodded again.

"This Visi-Sonor is the first step in the process. He says he can play it; and his reaction now makes it pretty certain that it's one of the great joys of his life. So whether the playing is good or bad, be interested and appreciative. Then exhibit friendliness and confidence in me. Above all, follow my lead in everything." There was a swift glance at Magnifico, huddled in a corner of the sofa, making rapid adjustments in the interior of the instrument. He was completely absorbed.

Mis said in a conversational tone to Bayta, "Ever hear a Visi-Sonor?"

"Once," said Bayta, equally casually, "at a concert of rare instruments. I wasn't impressed."

"Well, I doubt that you came across good playing. There are very few really good players. It's not so much that it requires physical co-ordination—a multi-bank piano requires more, for instance—as a certain type of free-wheeling mentality." In a lower voice, "That's why our living skeleton there might be better than we think. More often than not, good players are idiots otherwise. It's one of those queer setups that makes psychology interesting."

He added, in a patent effort to manufacture light conversation. "You know how the beblistered thing works? I looked it up for this purpose, and all I've made out so far is that its radiations stimulate the optic center of the brain directly, without ever touching the optic nerve. It's actually the utilization of a sense never met with in ordinary nature. Remarkable, when you come to think of it. What you hear is all right. That's ordinary. Eardrum, cochlea, all that. But— *Shh!* He's ready. Will you kick that switch. It works better in the dark."

In the darkness, Magnifico was a mere blob, Ebling Mis a heavy-breathing mass. Bayta found herself straining her eyes anxiously, and at first with no effect. There was a thin, reedy quaver in the air, that wavered raggedly up the scale. It hovered, dropped and caught itself, gained in body, and swooped into a booming crash that had the effect of a thunderous split in a veiling curtain.

A little globe of pulsing color grew in rhythmic spurts and burst in midair into formless gouts that swirled high and came down as curving streamers in interlacing patterns. They coalesced into little spheres, no two alike in color—and Bayta began discovering things.

She noticed that closing her eyes made the color pattern all the clearer; that each little movement of color had its own little pattern of sound; that she could not identify the colors; and, lastly, that the the globes were not globes but little figures.

Little figures; little shifting flames, that danced and flickered in their myriads; that dropped out of sight and returned from nowhere; that whipped about one another and coalesced then into a new color.

Incongruously, Bayta thought of the little blobs of color that come at night when you close your eyelids till they hurt, and stare patiently. There was the old familiar effect of the marching polka dots of shifting color, of the contracting concentric circles, of the shapeless masses that quiver momentarily. All that, larger, multivaried—and each little dot of color a tiny figure.

They darted at her in pairs, and she lifted her hands with a sudden gasp, but they tumbled and for an instant she was the center of a brilliant snowstorm, while cold light slipped off her shoulders and down her arm is a luminous ski-slide, shooting off her stiff fingers and meeting slowly in a shining midair focus. Beneath it all, the sound of a hundred instruments flowed in liquid streams until she could not tell it from the light.

She wondered if Ebling Mis were seeing the same thing, and if not, what he did see. The wonder passed, and then—

She was watching again. The little figures—were they little figures? little tiny women with burning hair that turned and bent too quickly for the mind to focus?—seized one another in star-shaped groups that turned—and the music

was faint laughter—girl's laughter that began inside the ear.

The stars drew together, sparked toward one another, grew slowly into structure—and from below, a palace shot upward in rapid evolution. Each brick a tiny color, each color a tiny spark, each spark a stabbing light that shifted patterns and led the eye skyward to twenty jeweled minarets.

A glittering carpet shot out and about, whirling, spinning an insubstantial web that engulfed all space, and from it luminous shoots stabbed upward and branched into trees that sang with a music all their own.

Bayta sat inclosed in it. The music welled about her in rapid, lyrical flights. She reached out to touch a fragile tree and blossoming spicules floated downwards and faded, each with its clear, tiny tinkle.

The music crashed in twenty cymbals, and before her an area flamed up in a spout and cascaded down invisible steps into Bayta's lap, where it spilled over and flowed in rapid current, raising the fiery sparkle to her waist, while across her lap was a rainbow bridge and upon it the little figures—

A place, and a garden, and tiny men and women on a bridge, stretching out as far as she could see, swimming through the stately swells of stringed music converging in upon her—

And then—there seemed a frightened pause, a hesitant, indrawn motion, a swift collapse. The colors fled, spun into a globe that shrank, and rose, and disappeared.

And it was merely dark again.

A heavy foot scratched for the pedal, reached it, and the light flooded in; the flat light of a prosy sun. Bayta blinked until the tears came, as though for the longing of what was gone. Ebling Mis was a podgy inertness with his eyes still round and his mouth still open.

Only Magnifico himself was alive, and he fondled his Visi-Sonor in a crooning ecstasy.

"My lady," he gasped, "it is indeed of an effect the most magical. It is of balance and response almost beyond hope in its delicacy and stability. On this, it would seem I could work wonders. How liked you my composition, my lady?"

"Was it yours?" breathed Bayta. "Your own?"

At her awe, his thin face turned a glowing red to the tip of his mighty nose. "My very own, my lady. The Mule liked it not, but often and often I have played it for my own amusement. It was once, in my youth, that I saw the palace—a gigantic place of jeweled riches that I saw from a distance at a time of high carnival. There were people of a splendor undreamed of—and magnificence more than ever I saw afterwards, even in the Mule's service. It is but a poor makeshift I have created, but my mind's poverty precludes more. I call it, 'The Memory of Heaven.'"

Now through the midst of the chatter, Mis shook himself to active life. "Here," he said, "here, Magnifico, would you like to do that

same thing for others?"

For a moment, the clown drew back. "For others?" he quavered.

"For thousands," cried Mis, "in the great Halls of the Foundation. Would you like to be your own master, and honored by all, wealthy, and . . . and—" his imagination failed him. "And all that? Eh? What do you say?"

"But how may I be all that, mighty sir, for indeed I am but a poor clown ungiven to the great things of the world?"

The psychologist puffed out his lips, and passed the back of his hand across his brow. He said, "But your playing, man. The world is yours if you would play so for the mayor and his Trading Trusts. Wouldn't you like that?"

The clown glanced briefly at Bayta, "Would *she* stay with me?"

Bayta laughed, "Of course, silly. Would it be likely that I'd leave you now that you're on the point of becoming rich and famous?"

"It would all be yours," he replied earnestly, "and surely the wealth of Galaxy itself would be yours before I could repay my debt to your kindness."

"But," said Mis, casually, "if you would first help me—"

"What is that?"

The psychologist paused, and smiled, "A little surface probe that doesn't hurt. It wouldn't touch but the peel of your brain."

There was a flare of deadly fear in Magnifico's eyes. "Not a probe. I have seen it used. It drains the mind and leaves an empty skull. The Mule did use it upon traitors and let them wander mindless through the streets, until out of mercy, they were killed." He held up his hand to push Mis away.

"That was a psychic probe," explained Mis, patiently, "and even that would only harm a person when misused. This probe I have is a surface probe and wouldn't hurt a baby."

"That's right, Magnifico," urged Bayta. "It's only to help beat the Mule and keep him far away. Once that's done, you and I will be rich and famous all our lives."

Magnifico held out a trembling hand, "Will you hold my hand then?"

Bayta took it in both her own, and the clown watched the approach of the burnished terminal plates with large eyes.

Ebling Mis rested carelessly on the too-lavish chair in Mayor Indbur's private quarters, unregenerately unthankful for the condescension shown him and watched the small mayor's fidgeting unsympathetically. He tossed away a cigar stub and spat out a shred of tobacco.

"And, incidentally, if you want something for your next concert at Mallow Hall, Indbur," he said, "you can dump out those electronic gadgeteers into the sewers they came from and have this little freak play the Visi-Sonor for you. Indbur—it's out of this world."

Indbur said peevishly, "I did not call you here to listen to your lectures on music. What of the Mule? Tell me that. What of the Mule?"

"The Mule? Well, I'll tell you—I used a surface probe and got little. Can't use the psychic probe because the freak is scared blind of it, so that his resistance will probably blow his unprintable mental fuses as soon as contact is made. But this is what I've got, if you'll just stop tapping your fingernails—

"First place, de-stress the Mule's physical strength. He's probably strong, but most of the freak's fairy tales about it are probably considerably blown up by his own fearful memory. He wears queer glasses his eyes kill, he evidently has mental powers."

"So much we had at the start," commented the mayor, sourly.

"Then the probe confirms it, and from there on I've been working mathematically."

"So? And how long will all this take? Your word-rattling will deafen me yet."

"About a month, I should say, and I may have something for you. And I may not, of course. But what of it? If this is all outside Seldon's plans, our chances are precious little, unprintable little."

Indbur whirled on the psychologist fiercely, "Now I have you, traitor. Lie! Say you're not one of these criminal rumor-mongers that are spreading defeatism and panic through the Foundation, and making my work doubly hard."

"I? I?" Mis gathered anger slowly.

Indbur swore at him. "Because by the dust-clouds of space, the Foundation will win—the Foundation *must* win."

"Despite the loss at Horleggor?"

"It was not a loss. You have swallowed that spreading lie, too? We were outnumbered and betreasoned—"

"By whom?" demanded Mis, contemptuously.

"By the lice-ridden democrats of the gutter," shouted Indbur back at him. "I have known for long that the fleet has been riddled by democratic cells. Most have been wiped out, but enough remain for the unexplained surrender of twenty ships in the thickest of the swarming fight. Enough to force an apparent defeat.

"For that matter, my rough-tongued, simple patriot and epitome of the primitive virtues, what are your own connections with the democrats?"

Ebling Mis shrugged it off, "You rave, do you know that? What of the retreat since, and the loss of half of Siwenna? Democrats again?"

"No. Not democrats," the little man smiled sharply. "We retreat—as the Foundation has always retreated under attack, until the inevitable march of history turns with us. Already, I see the outcome. Already, the so-called underground of the democrats has issued manifestoes swearing aid and allegiance to the Government. It could be a feint, a cover for a deeper treachery, but I make good use of it, and the propaganda distilled from it will have its effect, whatever the crawling traitors scheme. And better than that—"

(Continued on page 139)

Line To Tomorrow

by LEWIS PADGETT

It was a perfectly ordinary telephone, but some wires got a little crossed —and it turned out to be a party line, with one party in Tomorrow!

Illustrated by Kramer

"Acknowledging. The initial steps have been accomplished. I am now fitted satisfactorily into the basic sociological pattern."

"Good. The contact is established. From time to time directions and guidance will be issued, Korys—"

The telephone rang. Fletcher kept his eyes shut and pretended not to hear it. He tried to recapture a rather pleasant dream, but the insistent shrilling would not stop. His time-sense was sufficiently warped by half-sleep so that the intervals between the rings seemed to stretch pleasantly into interminable minutes. Then *tr-r-r-ranggg!*

Finally he slid out of bed, fumbled his way across the room and, after a brief altercation with the door, located the telephone. He picked it up and muttered an inarticulate something.

"Korys" a voice said. "Is that you?"

"Wrong number," Fletcher growled, but before he could replace the receiver, the voice went on.

"Good. For a while I couldn't make contact. There was a temporal storm—at least, we *think* that was it—though it might have been the creebs shifting. You know how difficult it is to maintain a circuit like this—what took you so long to answer?"

There was a long pause of dead silence. Fletcher, drunk with sleep, swayed on his feet, too drowsy to take the receiver from his ear.

The voice said, "Couldn't hear me? That's odd. But you can now, eh? Well, you'd better start making notes for your thesis. Here's an instruction: Buy Transsteel now, sell in two days. That will give you currency for your needs."

Silence. Then—

"Yes. But remember to be unobtrusive. And don't felk the sorkins, if you can avoid it."

The silence lengthened. Fletcher, murmuring something about practical jokes, hung up and went back

to bed, where he managed to dream about felked sorkins. They looked rather like pickles dressed in gay red jackets, but their eyes were blue. By the time the creebs shifted —spidery creatures they were, rushing like lemmings down the beaches —Fletcher woke up with a headache and a mild hangover. Silently cursing his own imagination, he went feebly into the bathroom and revived himself with a cool shower. He shaved, arranged a makeshift breakfast, and read the morning newspaper. Transsteel, he noticed, was at 28¼.

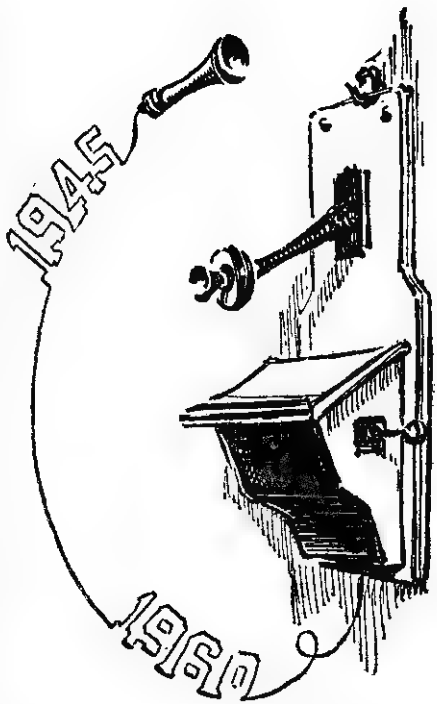
He went down to the advertising agency where he worked, made a few abortive passes at layouts, and had a stroke of good luck in dating Cynthia Dale, who wrote fashion and perfume copy. Cynthia was a lovely redhead, with expensive tastes and a capacity for liquor that Fletcher found surprising. They met after work and had dinner; Fletcher enjoyed himself thoroughly. A mild headache wore off in the course of the evening, and Cynthia unbent more than usual. He woke the next morning with a hazy memory of Cynthia's head on his shoulder and her husky voice reciting a list of synonyms for *fragrant*.

"Aromatic," Fletcher suggested.

"Shut up, Jerry. I've almost got the right word—"

"So have I," Fletcher said, lifting his glass. "Nuts."

This time the telephone didn't ring until 8 a.m. By then Fletcher was downing coffee, carefully avoiding sudden motions. His head had been stuffed with moldy hay; not only could he taste it, but it had packed down inside his skull and felt awful. The sudden ringing sent lightning flashing behind Fletcher's eyes.



"G-g-g . . . yeah," he said, lifting the receiver.

"Good morning, Korys," the voice said brightly. "Though it's night here, of course. Did you buy the Transsteel?"

"What kind of screwy gag is this?" Fletcher asked in thick fury. "I don't—"

"Sell it tomorrow, then," the voice directed. "At a hundred and seven. How do you like the people?"

"I hate the people!" Fletcher snarled, but apparently the other party didn't hear.

"Coryza was fairly common then. If we could transport whole bodies, we could immunize them, but you've got to take the body you get—though we generally locate fairly healthy ones. If you'd been majoring in medicine, we might have chosen a diseased body for you, but since it's socio-economics with you—"

Fletcher clicked the phone, but the connection wasn't broken. "—get rid of it," the voice said cheerfully. "Use this. It's a cure for coryza and several other minor things. One ounce sodium chloride, a pinch of baking soda—" It listed a few ingredients. "That should do it. Good-by, and good luck."

"Gah," said Fletcher inarticulately. He decided to get in touch with the phone company if this continued. Having madmen call for one-sided conversations every morning was a depressing prospect. Even without a hangover. Reminded of the Armageddon in his head, Fletcher went into the kitchen looking for tomato juice. There wasn't any. Giddy nausea lurched through him as he straightened from the refrigerator. He could feel the creebs shifting. At least, it felt that way.

He picked up the saltcellar and examined it thoughtfully. Sodium chloride. What the devil was that mixture the voice had recommended? Coryza—well, he didn't have a cold, but his head ached, his bones pained, and he was profoundly depressed. The stuff wouldn't kill him. He hoped.

Fletcher had a slight tendency to hypochondria, stimulated, perhaps, by the increasing frequency of his headaches. Therefore he found it impossible to resist trying new remedies. The various ingredients were all available, but he had never heard of mixing such things together. It was green, it effervesced, and the taste was vile. Nevertheless Fletcher drank it, if only to stop the creebs.

Ten seconds later he set down the glass and blinked at nothing. He shook his head experimentally.

No creebs.

It couldn't happen. An instantaneous cure for a monumental hangover was an obvious impossibility. But Fletcher's hangover was gone, headache and all. He felt fine.

"I'll be damned," he said softly. Then he snatched for paper and pencil and jotted down the ingredients of the cure-all as a precaution against forgetfulness. He held up his hand and watched its steadiness with disbelieving eyes.

Somebody had been very helpful.

No one at the office would admit to telephoning Jerry Fletcher that morning. It had been a man's voice, he remembered, but Cynthia's husky tones might have been sufficiently deceptive. He asked her. She denied everything and seemed ill-tempered. Obviously if Cynthia knew the magical way of curing a hangover, she wouldn't have one now.

There was, however, a newspaper on her desk, and Fletcher took it back with him to his office. The financial news interested him. But Transsteel had dropped three and a quarter points; it was at 25 now. And the general news didn't indicate that there would be any unexpected shift in supply and demand that would boost the stock overnight. Fletcher shrugged, decided to take the gifts the gods offered, and began to work on a layout for pretzels.

The next morning the telephone rang again.

The voice said, "Hello, Korys. Don't forget Transsteel. It'll drop before noon."

Fletcher said. "Can you hear me?"

"Well, in your own home—but don't let it out. The stuff's dangerous without a control. But it's fair enough, no reason why you shouldn't be comfortable. This is a field trip, not an initiation."

"Hello . . . *you! Korys!*"

"Then here's the equation." Fletcher reached for a pencil and copied rapidly as the voice dictated. He didn't know some of the technical terms, so he spelled them out. Mathematical symbols weren't up his alley.

"Quite all right," the voice said cheerfully. "I'll expect a good thesis from you when you get back. Watch those sorkins, boy." There was a laugh and a faint click. Fletcher waited a moment, hung up, and began masticating his thumbnail.

Then he called the telephone company and asked questions. They said they'd check up. Fletcher was beginning to think they wouldn't find anything amiss. That term *field trip* had switched his thoughts on to a new track. He re-examined the equation, but found no light there. Maybe—

Abstractedly he dressed, gulped coffee, and went to the office. At noon he arranged to lunch with Dr. Sawtelle, a technician who worked for a huge commercial company that maintained an account with the advertising agency. Sawtelle was a skinny, gray-haired man with probing blue eyes.

"Where'd you get it?" he wanted to know.

"I'd rather not say just yet. All I want to know—"

Sawtelle studied the equation. "But this is ridiculous. You can't . . . of course you can't!" He began talking about half-time and alloy properties, using a jargon that left Fletcher baffled.

"Does it make sense?"

"No," Sawtelle said. "At least . . well, no. Look. I'd like to take this with me. I want to look up some references. It might mean something at that."

"Copy it," Fletcher suggested. Sawtelle did so. And that ended the discussion, for the nonce.

The newspaper listed Transsteel at 27½. That didn't make much sense either. Fletcher shrugged, finagled a date with Cynthia, and forgot the whole matter till he got back to his apartment shortly before dawn. He was very drunk, but the

miraculous hangover-cure remedied that. He turned on the radio as he undressed.

Presently it said, "—home of Dr. Andrew Sawtelle, research chemist. The building was totally destroyed by the blast. Entire family were killed—"

Fletcher reached out, turned off the radio, and sat looking at nothing until the telephone rang.

The voice was slightly distressed. "Haven't much time. Daki's in trouble. I knew when he flunked his psych conditioning course . . . eh? Oh, felking the sorkins—naturally! So he's due to be burned at the stake unless—he *would* choose the Spanish Inquisition as his major. We could simply bring him back to this time, but it would mean a low mark for him. If I can get him out of it some other way, I will."

Silence. Fletcher waited, his back and sides cool and wet.

"Not important, no. Did the Transsteel—eh? Well, fifteen thousand was good money in those days. What? . . . Election bets. Yes. They were a social phenomenon in that time. Just a fleck; I've the reference here . . . Browning will be the next president. Be careful not to win *every* wager, though. You don't want to arouse too much interest. You'll be graded on how unobtrusively you adjust to the social pattern, remember."

Pause.

"Exhibitionism isn't out of place in that era. You might arrange to lose an election bet, just to be on the safe side—" Silence again, then laughter. "Fine. Take him up on it. You'll look interesting riding a horse into the Waldorf-Astoria's lobby. Go ahead; you should learn about the normal eccentricities of the time, and certainly that's mild enough—you should spend a few days in 1986 some time and study the Lemming Craze—mass suicides, like the dancing manias of the Middle Ages. Go ahead and make the bet."

Fletcher moistened his lips. His head was beginning to ache again. When the voice spoke after another pause, the subject had apparently been changd.

"Fine. Embryo Korys is thriving. He'll be viable in two months. You must meet his mother some time. She used to visit the incubator every week till she was assigned to Polar Weather study. But I really haven't time, Korys, I must look after Daki. Good luck, boy."

Click.

Fletcher went out to the kitchen, found a bottle of rye, and sucked thirstily. He leaned against the sink and ran his palm slowly along cool green tile. It was solid and familiar. That made it worse, somehow. In an earthquake you expect the unusual. But not when the ground is solid under foot.

President Browning—!

Fifteen grand profit on Transsteel—!

Where was Korys—and *when?*

When Fletcher got to the office, he was somewhat tight and he hadn't wanted to use the hangover cure. Alcohol made a buffer. He played with layouts, but achieved

little. Time slipped by unnoticed. Eventually Cynthia Dale appeared, fitting on a small, foolish hat and looking surprised.

"You're a hound for work, Jerry," she said. "Aren't you going home?"

"I can't," Fletcher said. "I felked the sorkins."

"Try mixing them with soda," Cynthia suggested.

He put his hands flat on the desk and stared owlishly up at her. "There isn't any. I've a bottle in the drawer here . . . have a drink?"

"Not straight."

"Then marry me. We can go and visit Embryo Fletcher every Sunday."

"You need something," Cynthia said, firmly removing Fletcher from his chair, locating a hat, and lugging him to the elevator. "You need something strong and violent. You can take your choice between a drink and a Turkish bath. If you choose the latter, you'll be deprived of my company."

"You see," Fletcher said carefully, his mouth cold and stiff, "Dr. Sawtelle blew himself up. All his family, too. Quite dead. I've got the equation in my pocket. I am also a murderer."

He elaborated on this subject over a heavy slug of rye. The bartender, an experienced man, had mixed the drink with a licorice stick, so presently Fletcher became more coherent. Cynthia swam out of her fuzzy haze and became her usual charming, cool-eyed self.

"So I called the telephone company again today," Fletcher explained. "There's nothing wrong. Nothing *they* can find out, anyhow."

"So it's a gag."

"Dr. Sawtelle wouldn't agree, if he could be reassembled. Look." Fletcher lit a cigarette and used the match to destroy a scrap of paper. "There goes the equation. I'm afraid to keep it now. The Voice mentioned that it was dangerous without a control, but he didn't say what the control was."

"He?"

"Sure. A tiny man with a head as big as a watermelon. He lives in the future. I got it all figured out. He's a university professor and he sends his students back into time on field trips."

"With a field telephone, I suppose."

"No, an ordinary phone. They have to keep it quiet. They've a way of tapping the wires— It's logical, isn't it? A telephone call is strictly personal, on a one-party line. But the creebs shifted. Somehow the wires got crossed. I can listen in on part of the conversation now. The Voice's part. But I can't hear Korys."

"You're drunk. I don't believe a word of it." But Cynthia's eyes were troubled.

"Korys," Fletcher went on, "is living in a time when a guy named Browning is running for President. And he'll be elected, too. That's why the Transsteel business didn't work with me. Korys is in the future. I don't know when. 1950 or 1960 or maybe later. Do you know a politician named Browning?"

"I know a poet named Browning," Cynthia said, "but he's in the past."

"Yes. He painted duchesses—What should I do?"

"Have your phone number changed."

"It might— Look, Cynthia, I'm afraid to do anything and I'm afraid not to do anything. I've got a direct line on the future. It's never happened before. It's an opportunity it says here. I ought to be able to clean up a million bucks or write a book or something."

"Patent that hangover cure of yours."

"But it's limited. I can't ask questions. I can just listen in on what the Voice says. I can't trace down Korys because he's in the future, too. If I were sober, I wouldn't be this logical; my skepticism would be too strong. But why shouldn't I believe in Korys and the Voice when I can see the wallpaper crawling up to the ceiling, right across there."

"That's subjective," Cynthia pointed out.

"But what should I *do?*"

The girl played with her glass. "If I believed you—which I don't—I'd say the lines of logic point to certain possibilities. As a copywriter I know the rules of dramatic inevitability. Perhaps the Voice will learn you're listening in, and animate the telephone so it crawls down your throat and strangles you."

"Uh!" Fletcher said.

"Or he may send Korys back to kill you—or Embryo Korys."

"I haven't done anything."

"Well," Cynthia said, "here's another angle. In 1960 the Voice telephones you, and your name is Korys."

"I hate paradoxes," Fletcher said firmly. "This isn't a story. I wish it were. I'd know what to do then. But in life you just fumble around, you're not sure. I'm not equipped to listen in on phone calls from the future."

Cynthia's eyes were glowing. "Or you may be Korys yourself—with amnesia! And the Voice is really

talking to you, though you don't know it."

"Be quiet. Stop that. There'll be another call tomorrow morning—"

"Don't answer it."

"Ha!" Fletcher said scornfully, and there was a small silence.

"You see," he went on presently, "I figure we take the future for granted, in an abstract sort of way. We expect there'll be super-stuff, but we know it'll come gradually. When it impinges concretely, we don't *want* it."

"Afraid?"

"Thoroughly afraid," Fletcher agreed. "The temptation's too great. I might copy some equation, try it out, and turn into a blob of protoplasm. There are too many unknown factors. And I'm not going to get myself hurt."

"So?"

"I'm going to keep my nose clean, that's all. Fairy gold!" He grinned crookedly. "I know what it would turn to. But I've got the answer. I'm not going to take anything they offer. I'm not going to cheat. All I'll do is listen in. No harm in that."

"They might mention your death."

"I know I'm going to die sometime. I'm ready. Death and taxes aren't both certain; the existence of one precludes the existence of the other—*pro tem.* As long as I just listen—as long as I don't try to conquer the world or build death rays—I'm O. K."

"It reminds me of the old story about the guy who took a short cut through a haunted forest on Hallowe'en," Cynthia said. "He was thinking that he'd always been on the level, and if devils could get him just because he was in the forest, there just wasn't any justice."

"And?"

"And then a voice behind him said, 'There isn't,'" Cynthia said pleasantly. "That's all."

"I run no risks," Fletcher declared.

"And I haven't believed a word you've been saying. But it's a new line, anyhow. Pay for the drinks and let's go somewhere and eat."

Fletcher reached for his wallet.

Quite safe. He hadn't copied any of the instructions or equations the Voice dictated to Korys. Somewhere, in the misty abyss of the future, the Voice lived in his unimaginable world, checking his temporal maps as men today check spatial charts. There were test-tube babies and a rather incredible university and a Polar Weather Station. And Daki had been rescued from the Inquisition, by means of something the Voice referred to casually as a yofleec. "Yofleec is ceelfoy spelled backwards," Fletcher reflected. "Animal, vegetable, or mineral? I don't *care!*"

His interest became purely impersonal; he had forced it into those channels. It was a tremendous relief to know that he wouldn't be tempted to steal from the future, as the unhappy Dr. Sawtelle had tried to do. There had been some hesitation about the hangover cure; it seemed harmless enough, but

Fletcher wasn't sure about its possible toxic effects on a man of his era. It might eventually ossify him. He destroyed the recipe and refused to remember the ingredients.

Meanwhile, he followed the career of Korys with interest. These distorted glimpses into the future were fascinating. Remembering Cynthia's warning, he half expected the Voice to mention that a guy named Jerry Fletcher had been run down by a helicopter, but that never happened. The rules of inevitability didn't apply.

Why should they? He wasn't interfering. He wasn't sticking his neck out. He was following paths of cold logic; a spectator at a play was seldom shot by one of the actors.

John Wilkes Booth—

This wasn't a play. It was a movie. The actors were removed by temporal distances. Nevertheless he never interrupted the Voice now, and was careful to lift and replace the receiver very gently.

It went on for a month. Finally he learned that Korys was preparing to return to his original time-sector. The field work was almost completed. President Browning had been elected; the Dodgers had won the pennant; a lunar rocket base had been established. Fletcher wondered. 1950? 1960? Or later?

Cynthia steadily refused to visit his apartment and listen to the Voice. She contended that it was just a line. "It's better than etchings," she admitted, "but it's a little too *outré* to be convincing." But Fletcher thought that Cynthia was less skeptical than she admitted.

He didn't care. The affair would end soon, anyhow. His work at the office had not suffered; there was a raise and a promotion in sight, and his hypochondria had lapsed into a passive state. Occasionally he suspected his feeling of well-being and ate vitamin pills as a preventive measure, but not often.

He hadn't even taken notes of the Voice's words. In a way, it was a taboo—the same principle as avoiding stepping on the cracks in the sidewalk, so it won't rain.

"He should be leaving tomorrow," Fletcher told Cynthia one night at dinner.

"Who?"

"Korys, of course."

"Good. Then you may stop talking about him. Unless you get a new bee in your bonnet. What do you expect next? A tame leprechaun?"

Fletcher grinned. "I can't afford it."

"They eat cream, don't they? I mean drink it."

"Mine won't. He'll drink rye and like it."

"I like this chicken cacciatore," Cynthia said, masticating. "If you promise to feed me this well all the time, I may reconsider my refusal to marry you."

It was the most hopeful sign she had shown so far. Fletcher became immersed in daydreams. Later, on a roof garden, they paused between dances to stand at the parapet and look out over the great, glittering

city. The immensity of the night was made larger by the lights below.

"A rocket base on the Moon," Fletcher said softly.

Cool winds brushed his cheek. He put his arm about Cynthia and drew her close. He was very glad, suddenly, that he had not stepped on the cracks in the sidewalk. He had taken no chances. The future—the unknown—was dangerous, because it *was* the unknown.

And that peril could lie fearfully close. Here, now—two steps could carry him to the top of the parapet and over. Luckily men were conditioned against taking those two steps.

"It's cold," he said. "Let's go in Cynthia. We don't want pneumonia—especially now."

The telephone rang. Fletcher had awakened with another headache this morning. Probably a hangover. He put down his cigarette in an ashtray and gently lifted the receiver. This might be the last call.

The Voice said, "All ready, Korys?"

Pause.

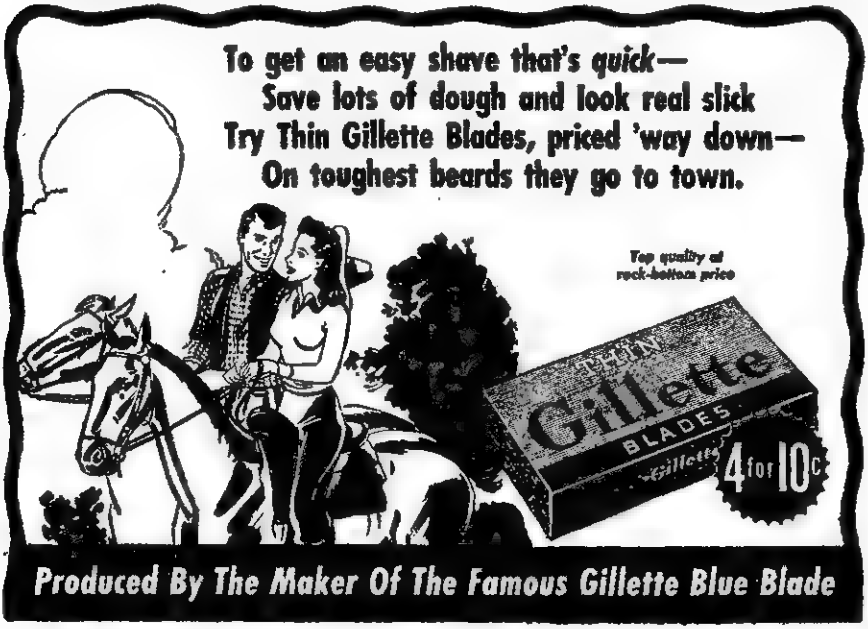
"Half an hour, then. But what caused the delay?"

Another, longer pause.

"Oh, really? I must make a note of that. But neuroses were common in that time. There was a touch of it in Embryo Korys, you know, but it was ironed out. Incidentally, his mother is on furlough. You'll be able to meet her in a few hours—But about this man. He knew who you were?"

Pause.

"I don't see how he *could* have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known. Or located you. If he was as incoherent as all that, he shouldn't have been outside a sanatorium. What was his name?"

Pause.

"Fletcher. Gerald Fletcher? I'll check, but I'm sure there's no record. He's not one of *ours*. Too bad. Had he escaped from a sanatorium or . . . Oh, I see. Well, he's in safe hands now, I suppose. Yes, a mental sanatorium they called it in those days. Your research hasn't covered the medical field—such as it was! Curious that he should have known you. I can't understand—"

Pause.

"Called you by name? Not *Korys?* Really. How could he possibly have known? This is very interesting indeed. Just when did he first appear?"

Pause.

"Crowded—well, naturally. Riding a horse into the Waldorf-Astoria isn't done every day. But I told you there'd be no trouble; every paid off eccentric election bet in those days— Well, if he actually dragged you off the horse and called you by name—it's very curious. Obviously he was mad, but how he knew— No, it couldn't be ESP, could it? There's no actual evidence that the insane are more sensitive than— What did you find out about him?"

Pause.

"I see. Anxiety neurosis, of course, at the start. Something was bothering him—dread of the future, perhaps; that's common enough in such cases. The doctors said . . . oh! Then he had escaped from a sanatorium. That sort of thing was interesting—probably started as nothing but hypochondria—built on some recurrent ailment, headaches or — Anyhow, it could increase over a long period into a genuine psychosis. How old a man was he?"

The humming void held only silence. And presently—

"Um-m-m. Typical, I'd say, at that age. Nothing we can do now, though—it's a pity. The man's hopelessly insane. It would be interesting to know what it was that set him off on the wrong track originally. I wonder what a man of that time and that type would worry about enough to drive him off balance? Such things start from a basis of hypochondria often enough, as you've described it, but why was he so *sure* he was going to become insane? Naturally, if you're convinced you're becoming psychotic and brood over it for years—well! Still, we can discuss the case in more detail personally. Half an hour, then?"

Pause.

"Fine. I'm glad you didn't felk the sorkins, boy!" The Voice laughed jovially. There was a click.

Fletcher watched his hand move forward and drop the receiver into its black cradle.

He felt the walls close in.

THE END.

By Yon Bonnie Banks

by

GEOFF ST. REYNARD

A fantasy of a fog, and a wrong turn that led through time—back from one war, to a battle of long ago, where the outcome was forcordained—and still unexpected.

Illustrated by Kramer

"You are. gentlemen, the first invasion of England." The plump officer showed his uneven teeth in a congratulatory grin. "After you will come thousands, hundreds of thousands, then millions. Yours is the honor of the pioneer; yours, the indispensable work of making ready.

"You understand your orders fully. After arrival you will contact Joseph Gaudens at The Ram and Snuffbox in Hudley; you should land no farther than three

miles from there. He has been given the necessary materials; it remains only for you to make use of them.

"Let me impress upon you one final time the fact that should you fail, it will be many months before we will be in a position to invade England again with such small risk to ourselves. The moves you have been instructed to make require intelligent, trained, superior saboteurs. There is unfortunately no one in England now who can carry them out fully, as you can."

The nine men stirred proudly.

"The Third Reich has educated you in preparation for this one task. The time is ripe, now, this moment. In four, five days, a week at most, the English will have covered the weak spot, lined that coast with steel and death, and the invasion will have to be made from a much less favorable spot. Should you succeed—and you *must* succeed—the explosion of this single stronghold here," he indicated a cross on the large-scale wall map, "will bring wave after wave of our soldiers, to pour over England and bring the decadent British to final submission. Then, gentlemen, it is just possible that we shall turn our faces west."

The ten went out into the swirling fog and strode over the flat, wet field to the side of a huge misty gray plane. It was an obsolete commercial airline ship, converted for paratroop use.

The plump officer spoke again. "One last inspection of your English identifications, gentlemen, I must request."

Colonel Sir Robert Sheridan, D.S.O.; 48th Divisional Artillery.

Lord Ralph Gordon-Knight, British Intelligence.

Sir George Randolph Godden, British Intelligence.

Gilbert Locke, Roger James Gibson, Thomas Ferrar Dallingford, John Murchison, Walter Pratt, Keith Morton, all junior men in the British Intelligence.

Papers, gently insisting that the bearers be given every consideration and aid; signature, Chief of British Army Intelligence, very authentic.

"Everything, gentlemen, depends on the swiftness and boldness of your actions."

The huge propellers of the Junkers JU 52 whirled.

"From this moment think, speak, act nothing but English of the most English. For the Fuehrer!"

"Heil Hitler!"

"Heil Hitler!"

The long-range ship glided through the mist and was gone. The plump officer turned and reentered his office. He spoke brusquely into a phone.

"Yes, they are on their way. See that the blitzing of London remains heavy for at least four hours longer. Yes, distracts their attention. You might try for permission to bomb Coventry, too. Misdirection, you know."

Over Dunkirk and into the black of the Channel night sped the nine-man Nazi invasion.

Slightly rotund Major Rudolf von Sturringer, otherwise Sir George Randolph Godden—late of

the cloistered halls of Oxford, still later of the iron-bound halls of the Wilhelmstrasse — picked himself inch by inch out of a very prickly tree, swearing furiously in a low monotone. He, after much effort, folded his parachute; stripped off his dark uniform; and, opening his pack, extracted therefrom a suit of nearly-new Harris tweeds, an ingenious collapsible gray felt hat, and an excellent and compact overcoat.

Dressing, he checked his papers and belongings carefully, wrapped the uniform and parachute into a large bundle, and stuffed them under the great roots of a tree. Shoveling dirt and stones in upon them, he carefully transplanted moss until he was satisfied with his handiwork.

Then, and then only, did he strike out in search of his companions.

He followed the sound of leaping water until he came to a broad black river, rapids scattered over its surface and in its center a tiny dark island. Shreds and tatters of mist drifted menacingly close to the surface. He hallooed softly, and was answered from upstream.

"Hello, old boy," he said quietly to Dallingford, who met him a few yards farther on. "Seen any of the others?"

"Not yet. Lovely place for a drop, this, what? Right in the middle of nowhere."

"We shan't have much trouble finding Hudley; it's due north," said the older man. He picked his way delicately over sand to the river's edge. "Hello, anyone around?"

"Here."

They found Gibson and Pratt in the process of changing. Keith Morton sat on a log in the slim moon's light, head in hands.

"I say, what's up?"

"The colonel's been drowned."

"No!"

"Yes. We saw him go down river just as we came up. I think he landed on that island and tried to swim for it."

"This spikes us nicely. It means we'll have to search for the body. If anyone finds it before we, it'll mean discovery sure as fate."

"What would?" Lean, hard-bitten Lord Gibson-Knight, alias Hermann Frick of the Gestapo, stepped out of the trees. He was already dressed in faultless tweeds, and he carried an ebony stick. Locke followed him.

"Hello. The colonel's been drowned."

"Thunder and death! That hustles us."

"I was just saying, we'd have to search for the body."

"Don't be an utter fool, man. We'll have to speed our plans, that's all. Streamline 'em. We've no time to waste—besides, and lucky for us, the colonel's got no connection with Intelligence men. When the British pick up a Nazi with a full English military kit they'll look for more military men. It's good I carried the papers. With care and skill we have nothing to fear."

"It was a silly idea ever to wear our uniforms," growled Dallingford.

"No indeed, my lad, that's just

what it wasn't," retorted plump Sir George Godden. "If I'd been wearing these togs when I lit in that tree I'd have been a sorry sight, I can tell you."

"For the love of heaven, Morton, take that monocle out of your eye," put in Gordon-Knight. "You're supposed to be an Intelligence man, not Bertie Wooster."

The Germans rose and completed the secretion of their parachutes and uniforms. Then, Lord Gordon-Knight leading, they began to walk purposefully northward. Murchison joined them a little farther on at the edge of a dirt road.

Val Lake, hunched over like a large and rather disreputable frog, was coaxing a radish to grow. The cabbages were up, the carrots and spinach were doing splendidly, and each of the other radishes was swelling healthily in the early morning light; but this particular radish, a weak and selfish idler, was drooping as droops the tired warrior.

"No, no, old fellow," said Val to himself. "Do not, whatever you do, refer to this beautiful but misguided plant as a tired warrior. *You* are a tired warrior. Than which there is no—whicher. No. We will call this benighted shrub a tired laborer. The Radish with the Hoe."

He grinned ruefully to himself, straightened painfully, and gazed in a pensive manner at the weary radish.

Captain Valentine Lake, temporarily retired, was an English gentleman of about thirty; greatest assets, a large grin and two deceptively sad aquamarine eyes. His face was leathered by wind and sun and hardship, his hands were large and capable. Captain Lake was recuperating from a complete physical, mental, and nervous breakdown which had laid him out just after Dunkirk, a few months before.

He was often grateful for the devastating wave of illness that had sent him home to this gloriously peaceful forest to rest and rebuild his shattered self-control in perfect solitude. He was, in turn, sorry and ashamed that he should be grateful, but still, there it was. He wanted to be with his friends in London, taking all the Jerries could give; he wanted to entrain for the coast every day of his life, to join his brother officers at the barricades where they waited for invasion to come. But he was thankful that the British Army seemed able to endure his absence placidly; he had lived through much horror on the French coast.

He shoved a hand exploratively into his ancient suede jacket and fished out matches and a South African "Oom Paul" pipe, curved like a little fat saxophone. In gray-blue trousers he found a nearly full pouch of Skiff, and stuffed the little briar's mouth to the bursting point.

"Thank the powers for good tobacco," said he.

A thin blue trail ascending, he pondered again over the enormous problem of the radish. Finally he dug it up and musingly ate it. "To the strong, the victory; to the weak,

annihilation," he told the radish's bereaved top. "Hitler, Adolf, *circa* 1939."

Val Lake looked up quickly as feet scrunched on his gravel. Visitors other than the postman were rare. He tossed the radish top away.

"I say," said the tall thin tough-looking man with the military mustache, "what a jolly piece of luck. We've been wandering all night. About thought we'd have to build a fire and send smoke signals."

There were eight of them, all pretty average; one with walrus mustaches apparently suffered from apoplexy. His face was red and sweating, the veins stood out on his puffed cheeks and his forehead. Val jerked his mind into gear and stepped forward to open the gate.

"If you're strangers, I don't wonder you've walked in a circle," said he. "Are you from Moorton?"

The hard man laughed, a crisp brief bark. "We haven't walked in a circle. Had a compass, you know. We've bloody well walked all night in a straight line. Motor broke down. Out of petrol, too."

The men filed into the little garden. "Come up and sit down!" urged Val. "Lord, you must be tired. I'll get you some tea."

"Thanks, old chap. And might we ask, which way is it to Hudley?"

"I'll show you in a minute. It's a good five miles north of here."

He held out his hand, smiling. "My name's Lake," he said shyly. "Captain Val Lake."

"Lord Gordon-Knight, Intelligence," said the tall lean man, taking his hand in a fierce grip. "Glad to know you, captain. This is Sir George Godden," he gestured toward the apoplectic one. He introduced the other six.

"Sit down, gentlemen; I'll brew some tea and forage in the kitchen a bit."

"Most kind of you."

"Not at all."

The eight sat down on the little ivied porch, noting the calm beauty of the solid old house set all alone among the trees. "Bah Jove! How typically English," drawled Keith Morton. Godden lashed out fiercely with the side of his shoe and caught the younger man across the instep. "Shut your mouth!"

Lake came out with a heaped tray of sandwiches and biscuits and an enormous pot of tea.

"May one ask where you're bound for?" he queried as the men fell to eagerly.

"Coast," said Gordon-Knight briefly, around a mouthful of sandwich. "Just routine checking, y'know."

Val felt himself blush hotly as he tried to think of something to say. "Have some jam." The gentle art of light and airy conversation had never been mastered by this man's man. What *did* one talk about to a troop of Intelligence johnnies?

"I say, what filthy weather your motor picked to break down in," he essayed. "I've never seen such

fog in these parts. Regular pea-souper."

"Just like jolly old London, what?" assented young Pratt, and earned a hard stare from Gordon-Knight for his pains. "Come, come, Pratt," said the stare very plainly, "there is such a thing as being *too* British!"

The idle remark was accurate, for the lovely forest was swiftly being obscured in a thick haze of peculiar greenish tinge. Val thought he had never seen anything look quite so unhealthy. He shivered as the recent fever stirred in his bones.

"I'm sorry I haven't anything to take you to Hudley," said he. "I'm living quite frugally, and a car's an extravagant luxury up here."

"Quite all right, captain. If you can tell us how to reach Hudley, we'll be everlastingly grateful."

"I couldn't possibly tell you how to go in this foul stuff. I'd better come with you."

Objections were raised, but he genially overrode them and disappeared into his house, to emerge muffled in a long loose ulster. "Come along," said Val, "I'll have you there in short order."

Lord Gordon-Knight coughed with just the right amount of British reserve and embarrassment. "Awfully decent of you," he muttered.

"You know," said Val when they had walked a good three miles, "if I weren't absolutely sure that I couldn't lose my way hereabouts, I'd swear I was in a different part of the country altogether."

The tall peer looked at him sharply. "You're dead sure you *are* infallible?" he asked with a touch of sneer.

"Quite. I was born in this county. Cut my teeth on every tree within forty miles. But this road is—well, eldritch."

"Why?"

"For one thing, I've never known that it was heather and not dirt. In fact, gentlemen, day before yesterday it *was* dirt; I'll swear I've come straight, but at all events it's heather now."

They looked down through the swirling fog and saw that he was right, that the road was no more than a trampled track through lush heather.

"In the second place, gentlemen, there isn't any heather anywhere near Hudley. We're a strictly grass country around here."

The eight looked at each other sharply.

"Captain Lake, I must warn you that your position is a highly precarious one. If you have led us wrongly through willfulness or inexcusable stupidity the consequences will not be mild."

There was a hostile muttering.

"Gaudens will be stewing," growled Locke. Godden and Gordon-Knight glowered at him.

"Gaudens?" asked Val quickly. "Joe Gaudens of The Ram and Snuffbox?"

"Yes," admitted Gordon-Knight. "D'you know him?"

"Indeed I do," Val told him. "Old friend of the family."

He strode on in silence then, a great deal of thinking going on in his brown head. Gaudens had been taken away three days ago by soldiers; spy scare, said the village. What earthly reason could eight Intelligence men have for coming to see him here in Hudley? Particularly when he was interned somewhere else? Could it be that they didn't know it? But how on earth could they be ignorant of a fact like that? He held his tongue.

The fog adhered to their clothes unpleasantly, moisture coagulating like drying blood. It made swift progress difficult and annoying.

"Look."

Dallingford had plucked something from the side of the road. Val took it. It was a thistle. It looked very Scotch. It had the air of wearing an invisible kilt.

"Do you cultivate these in Northumberland?" asked Dallingford.

"There are some in the vicinity, though not many," Val answered

the dark chap. He decided that he liked Dallingford least of any of them. The man's brows were one unbroken line across his forehead, and he had a canine tooth that protruded slightly over his lower lip.

"Captain Lake." It was Gordon-Knight again. "I must ask you to give us your word that you are leading us correctly."

"Sorry, I can't do that. I know this county a lot better than the palm of my hand, but I've never seen a heather track in it before."

"Well. We must do something to orient ourselves." He took out a compass. "We'll see which way we're going."

He studied it a few minutes. "No. We won't. This compass has gone mad."

Lake looked over his shoulder. The needle was gyrating wildly. "I say, that's a German-made instrument, isn't it? Little beauty. Wonder what on earth's wrong with it? Spot of sabotage, perhaps?"

All eight looked at him oddly. "We are anything but amused."

"Captain, we *are* in a great hurry." Godden spoke. "There are a multitude of strange things happening. They have begun to happen since we met you. Can you explain this?"

Lake broke out in tiny drops of anger-sweat. "How the devil could I have anything to do with your bloody compass? And I've given you my word I'm sure we're going in the right direction."

"All right, all right," soothed Lord Gordon-Knight, with a peculiar stare at Godden. "We are wrought-up. The fact is, we've lost the way somewhere in this cursed fog."

"No, no," protested Val. "That's impossible. I could go it blind, I tell you."

"Quiet, please!"

Keith Morton stood listening intently. The others were silent.

"Why, it's a horse," said Murchison.

"Yes. I think it's coming this way."

"It certainly is. Listen to that!"

"That fellow must be lathering his pony."

The muffled hoofbeats drummed up out of the invisible and the rider was upon them. They all cried out in sudden fear and the careening beast was through them, scattering them like tenpins, and gone again into the green fog. Roger Gibson lay groaning on the path, doubled over with pain.

"What's up?" Gordon-Knight cried. "Are you hurt, Gibson?"

"Ja—der arm."

Godden coughed fiercely to cover the words, but Val had heard. He had heard something else, too. When the rider had thrown Gibson to the ground, the injured man had shouted *"Himmel!"*

Val could have sworn that was the word he used.

What kind of secret service men were these? Captain Val Lake pondered a moment, then shrugged. There were countless explanations. Gibson might be an expatriate German, there were dozens in England.

He might have an exceptional knowledge of German; it would doubtless fit in with his work.

But in a corner of his mind crouched the fact that when a man is startled suddenly, he will exclaim in his native tongue; and that fact sat and grinned at Val for a long time.

Gibson's left arm was shattered above the elbow. It was a nasty compound fracture.

"Did anyone get a look at the rider?" asked someone.

"No . . . no," they all repeated.

"Lake," snapped Gordon-Knight, "this settles it. I order you to lead us at once to civilization!"

"That you have no authority to do."

"I think so." The man handed several papers to Val, who glanced through them and returned them.

"It seems you have the authority, but I'm wondering if you have the power."

"What do you mean, sir?"

"We've been going straight for the nearest point of civilization for well over an hour, but we've succeeded only in becoming hopelessly lost. All we can do is go forward."

Gordon-Knight gave his bewildering compass another glance, then stuffed it in a pocket. "All right, come on."

Val Lake was whistling merrily to himself. Not at all taken with the manners of these stuffed shirts, he had begun nevertheless to enjoy the thrill of his odd experience. Wherever the heather track led, it was not to any canny place. He chuckled at the dreamlike quality his thoughts took on. He gave himself up to the insistent sensation of strolling into fairyland.

Progress was punctuated by groans from Gibson, whose arm was in a bad way. The dour Murchison supported him partially.

"'The time has come,' the Walrus said,

"'To talk of many things,'" caroled Val callously, happily.

"What's that?"

Val looked startled. "Looking Glass, Through the," he said ironically, his tone implying that of course everyone knew it.

"What's that?" repeated Gordon-Knight sharply.

"Sequel to 'Alice in Wonderland,' o' course."

"I see. A child's book."

Val was dumfounded. The Englishman who considered Alice a child's book would snort at—at Magna Carta as a puerile bit of paltering. He whistled softly to himself.

The viscid fog, green as chrysolite, was gradually thinning. They were out of the forest, at any rate, for nothing but heather could be seen. They tramped steadily on.

"When we come out of this emerald fog we'll surely be in Ireland," said Val. His head was remarkably light.

Godden and the thin man gave him a hate-filled look. He, pretending not to see, drew out his fat little pipe and lit it.

Low rolling hills and green meadows of heather and bracken shook themselves out of the mist.

Lavender mountains struck upward. Thistles dotted the sward like purple fairies dancing in the low wind under a yellow-bright sky. Val whistled.

"Not Ireland," said he. "Gentlemen, it seems we've taken the low road."

"Lake," rasped Gordon-Knight murderously, "stop your epigrams and tell me plainly where you've brought us."

Val's high spirits would not be dashed. He sang loudly and tunefully.

"Oh, ye'll tak' the high road an' I'll tak' the low road, an' I'll be in Scotland afore ye—"

Gordon-Knight swore fiercely.

"But me an' my true love, we'll neverrrr meet again—"

"Shut your mouth, blast you!"

"On the bonnie, b o n n i e BANKS—"

"I warn you, you idiot!"

"— O' Loch Lomond!" finished Val, not to be outshouted by a red-faced apoplectic and a gaunt pompous snob.

"Gentlemen," said Val solemnly, suppressing a desire to shout, laugh, and turn handsprings, "I believe we are in Bonnie Scoh'land."

Gordon-Knight smiled grimly. "Captain Lake, I happen to know we are at least ten miles from Scotland."

"Lord Gordon-Knight," replied Val politely, "two hours ago we were well over ten miles from Scotland. Now, however, and don't ask me how, I believe we are somewhere in the land of oatcakes and bagpipes. Pull up a scone and sit down. Pardon, sit doon."

For the life of him Val could not have told why he felt this way, rash, impudent, and facetious. For months he had been ill, weakly listless, torpid. He thought of the fog with its perhaps curious properties, of the clear soft air of this place, of the slacker radish, and of why-the-sea-is-boiling-hot and whether-pigs-have-wings, but he found no reasonable explanation. And he wanted none. It was enough to feel alive again. Scotland and Captain Lake agreed with one another. Val stuck his pipe in the lifted corner of his mouth, Scotland did likewise, and the two beamed at each other. "Hoot," said Val. "Hoot yersel'," returned Scotland.

"Mad," Godden had grumbled. He puffed his round cheeks out and looked bewildered. "But where can this be?"

And now Adventure took a hand in the proceedings.

Over the ridge of a little hill all covered with hazel bushes rode seven men at an easy trot. They saw the group on foot at the same time they were seen, and spurring their mounts to a long gallop flew down the easy slope toward them.

The man in front had without any doubt ridden out of a Hollywood epic in Technicolor directed by Mr. Cecil B. DeMille. His six followers, also in color, might have been a kiltie band had they carried bagpipes instead of basket-hilted swords. They were remarkably

well cast, thought Captain Lake in a vacant-minded way.

The leader, Val saw as they drew closer, was a slim youngish gentleman of fresh complexion, liquid hazel eyes, and hair like long light silk framing his face to the point of absolute beauty. He might have been a girl, but that under his belted scarlet tunic powerful muscles rippled quietly, and the sword by his side was long and heavy. He wore also plaid hose and dark wine-colored breeches, and the tartan over one shoulder was green and black. He had supple shoulders and lean, trim legs.

Drawing rein close in front of Val, he looked down quizzically at them.

"Weel," said he, "wha hae we here?"

"Englishmen," answered Val succinctly.

"Oh! Then I beg your pardon for dropping into the broad tongue of my ain home." His speech was English with a hint of roughening burr. He sat his horse easily, calmly. "You are like no Englishmen I ever saw, and I have aplenty with me. How do you come here, in the middle o' this place, when I and my men watch every pass in these hills?"

"You tell us," snapped Gordon-Knight, and Val had the fleeting feeling that surely here spoke no Englishman. "We're lost."

"Ah! Then you may be no friends, and again ye may be. Are ye Covenanters?"

"We're from the British Intelligence."

The young horseman seemed puzzled. "Aye," he murmured slowly. "But what on airth that may mean I've no thought. Speak plain: are you for James or William?"

"James or William, who?"

The young man's face darkened. "Do not play wi' me, black strangers," he shouted, his slight Scottish accent thickening perceptibly. "Be ye Covenanter or loyalist or renegade, or whate'er, tell it noo or tak' the consequences!"

Val shouldered Gordon-Knight aside. His head was flung up. "Jamey Stuart's the lad we're for, my bonnie man, and whom do *you* swear allegiance to?"

The horseman's features lightened and a girlish smile curved his soft mouth. "Do you say so, brown lad? Then ye'll maybe join forces with John Graham o' Claverhouse, Viscount Dundee?"

Val gasped at his own accuracy. "By God, I thought it might be! That face—it's the old boy himself!"

"Who?"

"You heard him say it—he's Dundee."

"Who in all blistering blazes is Dundee?"

Captain Valentine Lake looked yet once more in bewilderment at these surprisingly ignorant Englishmen. "Do you mean to say you've never heard of Claverhouse, Bonnie Dundee, who led the rebellion in Scotland against the Church of the Covenant back in 1685?"

The young man had listened attentively to this. "Aye," he broke in, "and this is 1689, and Claver-

house is still leading the armies of James Stuart against the Covenanting heretics."

Val was startled out of the uncanny calm which had held him. "1689! The year Dundee—" he stopped abruptly. He had almost said "died."

"The year I what?"

"What?" repeated Val stupidly.

The man shook his head and the long brown hair floated in the little breeze. "I'm thinking you're all daft," said he, perplexed.

One of the kilted Scotsmen rode up to Dundee's shoulder and spoke in his ear.

"Aye, I know," the leader answered him petulantly. He swung to the men again. "I've no time to stay here haverin' with loons; tell me straight and out who you are and whether you'll fight with me for our rightful King James, and we'll be gone. Mackay's men are out in the hills."

"We're English soldiers of fortune, my lord, who wish to fight with John Graham of Claverhouse for the true ruler of all Britain." It was Val who spoke. The others gaped at him. This fantastic scene was alien to them and to all they could conceive.

"Then come along." Dundee's tone was brisk. "You, the lad in gray cloak, take Ranald of Dod's steed here, and the rest of you run beside us." He turned his great stallion's head north.

Val was in the saddle of a big black devil of a beast; he put his hand on the gallant's arm and Dundee started like a frightened woman and rode out from under it. Val knew he had made a mistake.

"Pardon, sir," said he, "but these men with me cannot run. We've been on the road a great while."

Dundee frowned. "Of course, ye must have. And your men look no so strong. Well, we'll walk. It's not over far."

The queerly assorted company went over the hazel-covered hillock and set their faces toward a group of much higher hills. The unhorsed Ranald of Dod strode by Val's black; his gnarled paw was on the saddle, and his glances at Val were dour but not hostile.

"May I ask you one question, your lordship?" said Val to Dundee, who rode on his right. The Scot nodded briefly.

"What is the date?"

"Why, the 27th of July."

"And that body of men I see there—on that high plain above the valley—are your forces?" He pointed to a long thin multicolored patch.

"Yes."

"Then that is the pass of Killiecrankie."

"Of course."

Val sat silent, brain a whirl of speculation. His comprehensive historical courses at Oxford, taken for pure pleasure and never before of practical use to him, now gave him a substantial background for his weird conjectures. Captain Lake had enjoyed his History of Scotland: he knew exactly what to expect now as the party made its

way up and down the rolling contours of the clean-aired country.

Captain Lake had likewise enjoyed his fanciful literature. Lord Dunsany . . . Wells . . . Twain . . . and more lately, De Camp . . . Hubbard . . . and Kuttner . . . Bates . . . Claudy. . . .

Captain Lake knew all about time-travel. Pseudo-seriously, he had even made a small collection of the methods by which a man might go back and forward in that elastic element: there were complicated machines, nasty cracks on the skull, three wishes, bolts of lightning, concentration on mathematical formulae, injections of unspeakable fluids; and now he had added a new one. Clinging, gooey chrysolitic fog. It should be known in the trade as "Lake's Patented Time-Devouring Murk," or more simply as "Valentine's Viscous Vapor." He might bottle and market it, at a price.

Val Lake felt better and better. Unintentionally, with no stigma attaching to him at all, he had escaped the shattered world of Nazi block-busters and massacred civilians to a land where men fought cleanly, soldier against soldier, sword opposing broadsword and the victory to the strong, not to the more fiendish.

Captain Lake took off his ulster and wrapping it into a poncholike roll laid it across his saddle. He cleaned his Oom Paul pipe with some hazel leaves and filled it. The captain was at peace.

"Lake!" It was Gordon-Knight who shouted at him. He excused himself to Dundee and held in his horse till they came up with him.

"Well?"

The man's tone was bitter. "Since you are the honored guest of this fantastic idiot, perhaps you can tell us what this is all about."

Their faces were sullen and dangerous. Val sternly suppressed a giggle.

"Of course. We've ridden right out of 1940 into 1689, and the man ahead is Graham of Claverhouse, the gallant officer the Highlanders knew as Bonnie Dundee. Don't glare at me, my lord. I can't help it if I led you to Killiecrankie instead of The Ram and Snuffbox in Hudley. Why don't you sit back and enjoy it?"

Gordon-Knight ignored the last remark. "But this is incredible! Unbelievable! Such mad things cannot possibly happen."

"Remember the Connecticut Yankee."

"I fail to understand you."

"I thought you would." Val was very rude. He looked at them all. "Where's the chap with the crocked arm—Gibson?" No one answered.

"Listen, Englishman." It was Murchison of the sour face. "If this is true, then how do you propose to get out of here?"

"Out of 1689? Why, I don't."

"What?"

"There are men who would give their lives to see the battle of Killiecrankie."

Sir George broke in. He did not seem so astonished as the others. "If this is the battle of—whatever—then tell me, who won it?"

Val's features clouded. "It was on the field of Killiecrankie that the house of Stuart's final hopes were smashed. Dundee," he lowered his voice, "Dundee was shot to death there."

"Ah. What . . . who was the general of the opposition?"

"Hugh Mackay."

"Mackay. Thank you, captain." Godden was formal.

Val regarded the fat man. "I don't know what you are," said he, without rancor or feeling, "but you're not Englishmen." He struck his stallion and urged him to Dundee's side, and as he went he sang softly, as a tribute to his environs, "By yon bonnie banks and by yon bonnie braes—"

"A good song, that. Whose is it? I have never heard it sung before." Dundee smiled like a woman.

Val was inspired. "I know a better."

"Sing it then."

"It relates to you, sir."

Dundee laughed. "There are aplenty of those! Have ye heard the Convenanting ranters sing 'The Hell-wicked-witted Graham o' Claver'se'?"

"No. But this is a bonnier."

"Man, ye speak like a Highlander. Sing it well."

Without further ado Val lifted his excellent baritone in Sir Walter Scott's "Bonnie Dundee":

To the Lairds o' Convention 'twas Claver'se who spoke,
'Ere the King's crown shall fall there are crowns to be broke!
So let each Cavalier who loves honor and me
Come follow the bonnet o' Bonnie Dundee!

Dundee could scarcely contain his delight. *"Chreesta Tigearna!"* he swore in Gaelic. "A muckle gude song, avic!"

Val swung into the beautiful haunting lilt of the chorus.

Come fill up my cup, come fill up my can,
Come saddle your horses, and call up your men;
Come open the West Port, and let me gang free,
And it's room for the bonnets o' Bonnie Dundee!

"Lad, your hand! Ye maun teach that tune tae my piper, Wull Campbell!" His burr was growing thick and almost obscured his words. "What's your name, avic?"

"Captain Val Lake of the Royal Fusiliers."

"A captain, are ye? Then with me this day ye shall be. Is there more tae th' song?"

"Much more."

"Sing! Sing!"

As he rode down the sanctified bends of the Bow,
Ilk carline was flytin' and shakin' her pow;
But the young plants o' grace they looked couthie an' slee,
Thinkin', luck to thy bonnet, thou Bonnie Dundee!

"So they did, Lake, so they did!"

With sour-featured Whigs the Grassmarket was crammed,
As if half the West had set tryst to be hanged—

Dundee laughed. "They kent fine 'twas their hour had struck when Graham o' Claverhouse threw up his bonnet."

There was spite in each look, there was fear in each e'e,
As they watched for the bonnets of Bonnie Dundee.

Yon cowls o' Kilmarnock had spits and had spears,
And lang-hafted gullies to kill Cavaliers;
But they shrunk to close-heads and the causeway was free
At the toss of the bonnet of Bonnie Dundee.

He spurred to the foot o' the proud Castle Rock—

Dundee was overjoyed. "To think such a gallant song was never sung for me before! It's as bonnie as the Siubhal Shemis. Lake, I'll make ye my ain major-general if ye fight as well as ye sing. On, lad, on!"

Val obliged.

— *And with the gay Gordon he gallantly spoke:*
'Let Mons Meg and her marrows speak twa words or three
'For the love of the bonnet o' Bonnie Dundee.'

The Gordon demands of him which way he goes:
'Where'er shall direct me the shade of Montrose!'

"Now how was it known that I said that?"

'Your grace in short space shall hear tidings o' me,
'Or that low lies the bonnet o' Bonnie Dundee.'

There are hills beyond Pentland and lands beyond Forth,
If there's Lords in the Lowlands, there's Chiefs in the North;
There are wild Duniewassals three thousand times three
Will cry hoigh! for the bonnet of Bonnie Dundee.

Dundee lifted his hand. "Wait, Lake, we are nearly there. Ye must sing the lave to my piper."

Dundee set spurs to his mount, Lake kicked the black's ribs and together they cantered up a slight incline to the knoll where colorfully dressed officers of Dundee's army were standing.

Dundee dismounted and signed for Val to do the same. They were the center of a small group of men.

"Gentlemen, this is Captain Lake of the Royal Fusiliers. Captain, my old friend Sir Ewen Cameron of Lochiel, who fought at Philiphaugh under the great Montrose; Sir William Wallace, just out of Ireland; my lord the Earl of Dunfermline: Colin Macdonald of Keppoch—"The Colonel of the Cows"—and the greatest raider in the Highlands; Macdonald of Sleat; David Graham, my brother; Sir Donald Macdonald; Gilbert Ramsay, my right arm; Colonel Pearson, the commander of three hundred Irish devils; and yon comes running young Allan Macdonald, chief of all Clan Ranald and a better man than I."

The youthful head of Clan Ranald panted up, his pure white sporran swinging, the golden buckles of his ornate Highland full dress catching the sun in twinkles and flashes. He saluted Viscount Dundee. "Mackay has gi'en t' order to advance, and Balfour's battalion is already in t' pass."

Dundee thrust his foot into the stirrup again and swung his light body into the saddle, from whence he could command a view of the deep cut in the hills.

Temporarily forgotten, Val Lake stared about him at the glorious picture the Highlanders made against the background of Killiecrankie's pass.

Earlier that day, as Val now recalled from his military history, Dundee had left his camping ground in the valley just north of great Blair Castle, and with the Highland armies climbed the hillside past Lude until he reached the

ridge running from the high country on their left to the pass, narrow and virginally green, through which the Garry River ambled; along this ridge, a plateau of open sward before them, the young chief drew up the clans. The drawn-out line of them—"the thin plaid line," thought Val—stretched to right and left of the little knoll on which he stood, the thousands of tall tough fighters from Scotland's high places watching the pass intently or talking with the men next them. Some had thrust through their belts long pistols, or held flintlocks and arquebuses; but for the most part they were armed with claymore or basket-hilt sword, and each had a murderous-looking dirk. Here were companions-in-arms, men to fight beside, and Val caught himself wishing he could take a company of them to 1940 with him. A mad thought—what could these near-rabble soldiery do against, say, one machine-gun nest? Still, they were a distinct improvement over those un-English Englishmen with whom he had journeyed to 1689.

The young chief of Clan Ranald, Allan Macdonald, pushed through the officers to his side. "Ye're Captain Lake," said he half accusingly.

Val admitted it.

"My lord Dundee says ye broucht others wi' ye."

"Yes, eight others."

"An' whairr wad they be?"

Val glanced about him, said casually, "I don't see them."

"Aye. Neitherr do I." The big lad was grim now. "But ithers hae. Perrhaps ye'll step this way, captain?"

Val found himself backed against a rock, which, gray and hoary and striated, hovered as though to fall at any second and crush him under its bulk. Two black MacRaes in their red philabegs stood straddle-legged in front of him with naked claymores.

"Haver awa'," growled the one, "ye'll nae haver yersel' tae Dundee's side again."

Val, bewildered by his sudden reversal, thought a moment, grew wily. "What for no?" he queried with a thick stage-Scot accent.

The MacRae was startled. "Why, mon, ye're no English."

"O' coorse he's no English," snapped the other guard. "He's ane o' they *dhiaouls* frae Edinburgh."

Val dropped his ill-starred attempt at Scottish dialect. "Look here," said he persuasively, "let me see Dundee, will you? I'm to fight with him today."

"That ye're no."

"Why?"

The MacRaes glanced at each other. "They freends o' yours," answered the burliest, "a Macdonald seen 'em gangin' their gate doon t' Mackay's arrmy."

Val began to sweat. "They're no friends of mine."

"Say ye so?"

"I do."

"Haver awa'," sighed the MacRae. "Haver awa'."

"You've got to take me to Dundee. I'm to fight with him today."

"H a v e r awa', Sassenach," grunted the other MacRae.

Val went on havering.

Hermann Frick of the Gestapo, arm in arm with Major Rudolf von Sturringer of the German Intelligence Staff, went down the hill toward the Garry. Theirs was not an affectionate embrace, but owed its uncomfortable existence to the steepness of the ground here. The long coarse grass slashed at their legs. "How do these idiots stand such country when they're dressed in nothing but skirts?" growled Frick in guttural German.

Behind these two unsavory gentlemen scrambled four others, equally uncomfortable, equally unsavory. The seventh man, Thomas Dallingford, or Baldur Zimmermann, and the eighth, Roger Gibson, or Karl Koenig, were not with them.

From the protection of a tree stepped a dark-kilted Scot. "Stop," he said, his voice thick with the Lowland burr.

Von Sturringer smiled unpleasantly. "Are you of . . . uh . . . Mackay's army?" he puffed.

The Lowlander nodded slowly. "Aye."

"Then take us to Mackay."

The man frowned. "Let's no be hasty aboot this," said he.

John Graham of Claverhouse, Viscount Dundee, sat his horse easily and happily. There was going to be a large and angry battle, men were going to fight as they had not fought in forty years, and he was going with the help of God and the claymores to drive Hugh Mackay of Scourie and his hymn-bawling hellions into the sea. He gazed upon the scene and the prospects and he found them good.

Discarding his bright scarlet tunic and wine-colored breeches for an inconspicuous suit of watered gray silk and a plumed hat, he had ridden up the line of his men from end to end. Although it was the clan's first action since Philiphaugh, he believed they would acquit themselves excellently. His officers, Lochiel and Macdonald and Ramsay, had said they were certain of it. The clans would follow Dundee to Hell and bring back the devil's whiskers on a pole, was their extravagant claim; no Scot since the great Montrose had held such love in the Highlands.

The pass through which Mackay's army was hurriedly filing consisted of a straight road, two miles long and too narrow for more than half a dozen men to walk abreast. At the end of this pass they reached open ground, swung round, and formed ranks to face Dundee's Highlanders, who, on open ground high above and in front of them, held the advantage of their heighth and of the Garry, which with its precipitous banks cut off the best road of retreat for Mackay.

Galloping up and down the lines, Dundee had satisfied himself that the arrangement was the best he could make. He reviewed the forces once more in his mind: each clan drawn up to oppose a regiment of

Mackay's army—the spirit of emulation being so strong in the clans, each would strain to the utmost to see that his contingent did as well as or better than the next one.

On the extreme right, facing downhill, Dundee had placed the Macleans, a broad sturdy race of fighters under their beloved Lochbery. Already this section faced a battalion of Lowlanders under Balfour, who had extricated himself from the trap of Killiecrankie's narrow pass and was fidgeting and entangling his soldiers in an endless rearrangement.

After the Macleans came the three hundred Irishmen, wild scrawny lank-haired devils under Colonel Pearson. Clan Ranald, mighty fighters, notable braggarts, sat or stood behind young Allan Macdonald on Pearson's left; Allan slumped over his stallion's neck; as haggard and worried as though the battle rested entirely on his broad shoulders. Dundee chuckled softly. Allan was aye a body to fret in inaction.

Glengarry had brought three hundred clansmen and Dundee had stationed them next to Clan Ranald, followed by old Lochiel's faithful men and the Highlanders who owed allegiance to Sir Donald Macdonald.

Cavalry was Dundee's prime concern. He had raised a few Lowland renegades, and these, with some forty of his own old troop, were all the horsemen he had. They were a lean and ill-kept lot. This semicavalry the viscount had placed in the center of his lines, where they would face Mackay's five-score sabers.

He shaded his eyes from the sinking sun and watched Ramsay and Kenmore draw their battalions up in formation. The next contingent must be a newly recruited—no, it was the old rascal Leven, the fox himself.

Mackay's line of twelve hundred baggage horses was still milling in the pass. It was after four o'clock. Dundee smiled. He would wait and see how many more men Mackay could conjure out of Killiecrankie, he must still have the Earl of Annandale's troop of horse and Hastings' English regiment behind those horses.

Then he would show Hugh Mackay of Scourie how to crush a persistent reptile!

He wheeled and cantered past the ranks of Clan Ranald.

"Eh, Allan Macdonald," he shouted to the young chief, "have ye seen my new English friend—yon Captain Lake lad?"

Allan Macdonald reddened under his bark-brown tan. "I have that, Dundee. He's back there by th' tall rock, and twa stout MacRaes hae their orrders frae me t' skewer him tae it if he moves a finger."

Dundee spurred his animal venomously; it reared and came down by the Macdonald's mount. The leader thrust his face against Macdonald's, his eyes drawn to threatening slits and his teeth bared like a dog's.

"An' when hae I put t' sole chairrge o' this campaign intae the wee soft hands o' Allan o' Ranald?"

he whispered between those gleaming teeth. The English veneer had peeled off; the man was all proud Scot, his soul Adam-naked in its ferocity.

The captain of Clan Ranald flushed again.

"Th' mon's a spy."

Dundee's burr grew thicker. "Do ye say so, wee bairn? Do ye prresume tae instrruct me—*me*, ye skemmlin' auld carlin's whelp—in t' choosin' o' who shall be a spy an' who a freend?"

Allan Macdonald was silent in the face of insults he would have suffered from no other creature living or dead.

Dundee sat back in his saddle. His face gradually lost its black cast of rage. "I'm sorry, Allan," said he quietly. "But the Englishman's a lad I've taken a liking to. Ye had no right to do sic' a thing on your lone."

Sullenly, the Macdonald bowed from his saddle. "My apologies, Viscount Dundee," said he formally. "But I hae a reporrt that th' companions o' this Lake hae desairted to Hugh Mackay."

Dundee frowned. "Ne'ertheless, you should have come to me first." He wheeled and rode off. Allan Macdonald gnawed his lower lip and looked after his adored leader sadly.

The pair of MacRaes sent back to their places, Val restored to his horse and respectability and presented with a claymore and clumsy arquebus, Dundee and the Englishman rode slowly in front of Lochbery's Macleans. They glanced often down the hill toward Mackay's milling forces.

The late afternoon was fine, sharply-fresh, a tang of heather and of cooking fires with hot oatmeal cakes and scones drifting down the wind from behind the Highland lines.

Val Lake shifted the uncomfortable arquebus on his thighs and looked once more at the opposing force.

"Why don't you attack now, my lord, while Mackay is unprepared and off guard?"

The course of good Scotch history was not to be diverted by a twentieth-century Englishman.

"T'would not be gentlemanly," smiled Dundee. He followed Val's eyes to the clouds of befuddling dust that Mackay's baggage train was raising. "You are thinking I'm a military fool, captain?"

Val shook his head slowly. "N-no, not that, quite. No one could ever make such an accusation against your lordship. But, sir," he burst out, making one pitiful effort to alter relentless history and inexorable fate, "if you attacked now—while they're in confusion—you could slaughter the lot of them and come out li—" he halted abruptly.

Dundee frowned at him. "Lochiel himself said it this morning," he murmured. "Allan thinks it if he willna say it. Has everyone the second sight but me? Why do ye all believe I am going to die, captain?"

Val was silent. Dundee chuckled.

"Here," he said, "take a bit bite o' this scone and cheer up, ye doleful Covenanter." He accepted two of the round thick brown cakes from a camp-follower, a smiling girl, and handed one to Val. The Englishman wolfed it down, took another and ate it more slowly.

Viscount Dundee was serious now, staring at the Lowland men. "Captain," said he quietly, "I have been a soldier all my life. It has been no pleasure to me these last years, harrying and running down the Covenanting heretics like so many hares. I have played bogle-catch-the-fairy with them until I am sick of the filthy business! But it must be done if the Stuarts are to sit upon England's throne, and if necessary I shall continue it till eternity falls in ruins." He was the complete Englishman while the mood was on him.

"You see that army down there. If I can crush them fairly and well, the Covenant is wiped out and the crown of William of Orange will slip down about his neck and throttle him. If I am crushed by them, it means King James is finished." He threw up his head. "But by the heavens, I shall do it fairly and like a gentleman, or not at all. I will not attack until Mackay is ready."

They goaded their horses into motion and trotted slowly along the lines of waiting men.

Dundee reined in after some time and gestured toward a man in a green-blue tartan reclining on his elbow a little distant from the Macleans.

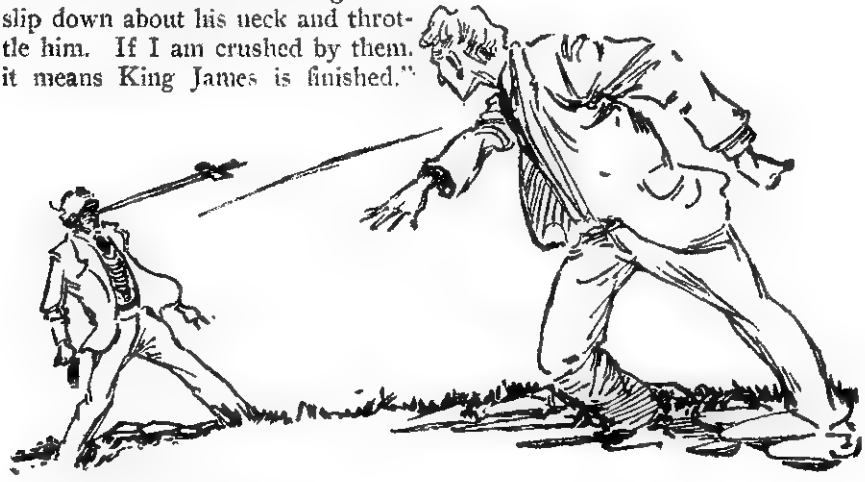
"Is that not one of your deserting companions?" he asked.

Val squinted. "Yes, that's Dallingford. Wonder where the others are?"

They rode up the hill to Dallingford. He regarded them with equanimity. Discarding his tweed overcoat, he had flung a long tartan over one shoulder as protective coloration.

"Hallo, Lake," said he.

"Where are the others?"



The man gestured negligently downhill.

"They've left us," he answered.

Dundee's brow creased. "And why?" the tone was dangerous.

Dallingford laughed almost defiantly. "Nazis don't fight on a losing side, Scotsman," he grunted.

To Valentine Lake the light dawned with an unholy red glow. "Nazis!" he exploded.

Dundee was puzzled.

"Yes, captain, Nazis." Dallingford did not smile. "They are six high-ranking Nazi agents. They are brave and unafraid, because they are of good German stock, but they do not fight for your fantastic Dundee because they are also good Nazis."

"And you?" Captain Lake clenched his hands on his pommel and the backs of them turned white and knotted. "Are you a good Nazi, Mr. Dallingford?"

"My name is Zimmermann. I am a German."

"Another Nazi!"

He looked at his hands. "I am not a Nazi. I am a German." He glanced up at Val under that one thick line of brow, his dogtooth turning his lip down unpleasantly. "We landed in England yesterday; we were going to dynamite the fortifications at Blaffasting. That will have to wait." He examined his hands again almost like a small boy caught stealing. "You cannot win, Englishman. Germany must conquer sooner or later. You must realize it. The sooner we sail against England, the sooner we can all be at peace again. That is why I was with them." He put up his face in challenge. "Can't you see you can't win? We will never stop until we have brought peace to all Europe, all the world." He was sincere, Val saw. The Englishman shuddered.

"I am German, yes, but I am not a Nazi. There are many of us. We will beat you soon, captain. I wanted to hurry that 'soon' along. It will have to be done by someone else." He shrugged. "Here we are now, all of us. The others are Nazis to their souls. They will not begin to fight on a side they know will lose. I . . . I . . . uh—" he groped for words, "I do not believe in that philosophy, Captain Lake. I . . . I—" He ceased.

Dundee was utterly baffled. "What *is* he talking about, captain?" he questioned Val.

"Why, ah—" Val too was inarticulate. "He . . . he will fight for you, my lord. Our former companions will not. That . . . that is all it really amounts to."

Dundee inspected Dallingford's face carefully. "Well. Get yourself a weapon, man," he said at last.

"I have this." He drew a snub-nosed automatic from a shoulder holster.

"A pistol will not be enough."

"This one will, Scotsman."

Dundee sat back. "A' richt," quoth he contemptuously, with a slight heaviness in his lately English tones, "suit yersel'."

He and Val rode on, then, recalling something, Val returned to Dallingford. "What happened to that

chap with the broken arm—what was his name?—Gibson?"

"Oh. Koenig." Dallingford turned his head and looked down the vivid green slope. "Von Sturringer, Sir George to you, knifed him." He looked back at Val. "He was, after all, no longer useful to us. His arm was shattered. Besides, he was a fool who could not hold his tongue."

Val thought he surprised traces of moistness in the German's eyes. "Well. Does that bother you, Dallingford?" he asked harshly.

Dallingford turned his head again. "A little. He was my half brother." The German scowled. "But a fool."

Val was suddenly ashamed. "Sorry," he muttered, and rode away to join Dundee again. By rights I ought to shoot the fellow, he thought; but he knew he would not do it.

He found Allan Macdonald with the viscount, his young eyes sharp and suspicious against Val Lake. He determined to grasp this Scotch bull by the horns and throw it.

"And why, chief of Clan Ranald, do you look at me with that glare of hatred in your bonnie blue eye?" said he.

The Macdonald shrugged and spat. "Ye've broucht dissension tae us, Sassenach. Ye've come atween me an' my lord Dundee heere."

"Oh? And how have I done that?"

Sullenly, "Och, ye've done it. This way an' that, aye, an' ye've done it, Englishman."

"And will you tell me how?" Val's temper grew hotter.

"Och, it's joost . . . oh, aye . . . weel, ane o' my men lookit ower t' grounds an' spied your freends wi' Mackay, an' then . . . weel . . . I ken—"

"And do you ken that I am with Mackay, brave Allan Macdonald?"

"Ye're no." He spat again. "Mayhap ye should be, Sassenach."

Dundee put a hand on the Macdonald's arm. "Allan, Allan, stop yer haverin'," said he softly. "This lad's none o' yon Lowland diel breed. Allan, are you and I to quarrel on this day o' all days?"

"Nae, Dundee." Macdonald shook himself. "It's that I'm worrited sick. Ye know how battle takes me beforehan'."

"Aye, and none braver in t' thick of it. Cheer up, now, Allan, and go tell Lochiel I'm near ready."

The young Macdonald rode off, his horse's hoofs tattooing along the turf swiftly and fiercely.

"He is aye over short in t' temper before battle."

Dundee shook his fine head slowly and the small furrows between his eyes smoothed out. He shuddered like a dog coming out of cold water.

"Well, Captain Lake, again it seems I must apologize for my men. They do not trust you too far, but," and he grinned, "they havena heard you sing."

"Dundee . . . my lord, I think I should warn you not to trust that other chap too far, either. Dallingford, I mean."

Dundee laughed. "Fear not! Allan will have ten picked men to guard him or I do not know my Allan. He will likewise have twenty chosen men to watch over you, captain." He laughed, with a warmth and life that made his laughter infectious.

"Enough, captain. Will you do me the honor of chanting another verse of that gallant song?" The burr and gruffness of the throaty old Highland speech lay dormant just behind the words.

Val took up the lilt of "Bonnie Dundee" where he had left off earlier that day.

There's brass on the target of barken'd bull-hide;
There's steel in the scabbard that dangles beside;
The brass shall be burnished, the steel shall flash free,
At a toss of the bonnet of Bonnie Dundee.

Dundee put up a hand to stop him and whistled to a piper of Black Donald Balloch of the Isles who stood not far from them. The piper, a major, hurried over, his kilt flapping his gnarled bare legs and his instrument clutched to his great wide chest.

"Listen to this, Pipe-major," admonished Dundee. "See if ye can catch the strain. Now, Lake," he smiled.

Then awa' to the hills, to the leas, to the rocks!
Ere I own a usurper, I'll couch wi' the fox!
And tremble, false Whigs, in the midst o' your glee—
You have not seen the last o' my bonnets an' me!

The piper nodded. "Sing it again, will ye," said he.

Val sang the verse again. The pipe-major listened intently, nodding, then lifted his instrument. "Hoo's this?"

The wild keening skirl of "Bonnie Dundee" lifted over the pass of Killiecrankie. The drones hummed and the high screaming notes caught up the melody and threw it against the clouds. Val considered the unending, eternal round of this song. Sir Walter Scott would, a century and more later, set stirring words to the tune which Captain Valentine Lake had taught Dundee's piper, Lake having learned this tune in London; now, who had originated it in the first place? The round again: Val heard it sung early in the twentieth century, set to the words written by Sir Walter Scott early in the nineteenth; Scott had heard the tune, then traditional, and believed that a late seventeenth century piper had written it; but Val Lake had really taught it to the piper. Who *had* written the thing? Val took his head between his hands and shook it gently. Time is a circle— Tell me, someone, Who drew the circle?

During a long two hours after Mackay had extracted his last man from the pass the two forces stood facing each other across the wide verdant incline, well within mus-

ket shot, without engaging. Mackay kept up a desultory firing with several insignificant portable cannon, constructed, Dundee explained to Val Lake, of toughened leather. The balls from these sailed overhead futilely, majestically, or came croppers in the turf between the armies, but so far as the two could tell they did no damage to anyone or anything.

About eight o'clock Viscount Dundee stood up in his stirrups to address his clansmen. As many as could hear him listened attentively, their great hands fondling claymores and their rough faces contorted into frowns or grins as the mood took them.

"Gentlemen of Scotland!" Dundee's high-pitched shout carried far in the still warm air. "I ask of you now—to do nothing but what you shall see me do before you. For those who fall, there will be the comfort and honor of dying in the performance of your duty; for those who live and conquer, there will be the gratitude of our rightful king and the praise of all good men." His faultless English broke down under the grip of passion. "Lads! Behave like trrue Scotsmen—in th' defense o' our King, our Kirk, an' our Countrry!" He sank down in the saddle, there came a moment of terrible silence, then a piper of the Gordons stepped out of his ranks and struck up "The Cock O' Th' North".

It broke the last powerful restraint that Dundee's forces had kept themselves under: the clansmen cast off their brogues and tartans, loosened their swords, and the front line gave an involuntary forward twitch, a lurch that nothing could have held back. Dundee lifted his hand and his mouth opened, but just then came the coarse bark of an automatic. The Gordon piper swayed and dropped to his knees, his pipe whined shrilly and dwindled its clamor, and he slowly doubled over on his face and lay still.

Val looked down to the Lowland lines; he sighted young Walter Pratt after a moment's gazing. The youthful Nazi still held his automatic and was grinning evilly. Val leveled his arquebus and fired quickly. Pratt seemed to fling himself over in a grotesque back flip into a gorse bush. His arms and legs dangled limply, marionette-wise.

"No firing till my signal," shouted Dundee. The front line repeated its pushing lunge. The clansmen's eyes were a trifle glazed, their throat muscles corded and taut, their mouths open, the blood pounding in their temples.

Lochiel arrived at a fierce gallop and reined in till his mount reared high. The old man's hand was on Dundee's pommel. "Ye canna haud them noo."

Dundee slapped his own firm brown hand down on Lochiel's. "I am nane sorry, friend."

His arm swung up and pointed down the slope.

"King James an' t' Kirk o' Scotland!"

Lochiel added his shrill yell.

"Ian Dhu Cean—Black John the

Warrior!" It was the clans' name for Dundee.

A dreadful shudder passed over the lines of Highlanders. They gripped their weapons and the shudder turned to a steady forward movement. They flowed along down the hill.

"Fraoch eilan!" It was the bull's bellow of Colin Macdonald of Keppoch, and his men had thrust to the forefront.

All through their lines the pipes began to scream—the gathering tunes and the war pibrochs of half Scotland sounded above Killiecrankie. Mackay's men stirred restlessly, and an intermittent fire came from the Lowland lines.

"A Gordon! A Gordon!" from some gravel-throated clansman.

"Tippermuir and Auldearn!"

And, roaring and terrible above all, Clan Ranald's grim slogan, "A dh' aindeoin cotheireadh e— In spite of all opposition!"

Val felt long fingers of ice tickle his spine. These cries, sounding above the most awful slaughters the world had seen—struggles in which whole sides were wiped out to the last man—these same cries had been the death tocsin and requiem of—how many valiant gentlemen? He shivered involuntarily and glanced at the figure of gallant Dundee where he rode recklessly down in the face of hundreds upon hundreds of sturdy relentless enemies, men who regarded my lord Dundee as the devil incarnate.

This battle would be Dundee's last. Val ground his teeth in hopeless, helpless rage.

The slogans and the war cries, however, conflicting with the shrill and throbbing pipe tunes, soon lifted Val Lake from his momentary dejection to the heights of frenzy. He stood up in his stirrups and waved his basket-hilted sword madly.

To Val, reminiscing later in the quiet of an evening, the first ten minutes of the Killiecrankie conflict consisted of isolated small occurrences, sharp little noises and sights with a vast dim overtone of bagpipes and shoutings; the bark of an arquebus, a scattered barking, the low hoarse cough of a leather cannon; a sharp smatter of fire, the bright curving arc of a multitude of arrows from the Lowland forces, a horseman at Val's left sliding off sideways with a flurry of bloody tartan; gathering tunes lifted wild and terrible, and still no fire from the advancing Highlanders; then, at last, Dundee's plummed hat flung high in the air, followed by the full dreadful crash and clamor of battle.

The clans, showing wonderful resolution in the face of the Lowland bullets, had not fired a shot until their chief's signal. But with it came a leaden surf that broke over Hugh Mackay's lines with stunning effect—like one great pounding wave of death the Highlands clashed with the Lowlands and forced them under.

After that the deafening noise was hushed, as the clansmen dropped muskets and arquebuses to fling themselves, swords in hand, on the enemy; and before the

startled men of Mackay could fix bayonets the young green of bracken had gone scarlet with their life blood.

Val found himself opposite a huge red horseman who, waving his sword like a firebrand high above his head, came at a dead run straight for the Englishman. Forgotten the long weeks of illness and apathy, left behind the dullness and indifference that had followed Dunkirk, Val Lake felt his blood turning to molten lava in his veins. He put up his claymore and stiffened his arm. The red man rode into his point and impaled himself with a broken grunt. Blood poured from his mouth and he died in the saddle. Val gave an unholy whoop.

"Dhia!" exclaimed a voice at his side. "Well thrust, Sassenach!" Val saw Allan Macdonald of Clan Ranald nod briefly to him and gallop off into the melee. He chuckled to himself.

He looked about him then, taking in all he could see in the haze of smoke that drifted in thick rags over the action. He could make out Dundee, hat gone and long silky hair flying, where he charged down toward the Garry after a group of foot soldiers. Then he saw Dallingford, the German, walking slowly through the fray, his arms folded and his head down. The man might have been strolling on the quay of a Sunday. Val shrugged and rode on. It was nothing to him if Dallingford—or whatever the man's correct name was—committed suicide.

A shape rose up beside his saddle and startled him for the fraction of a second. It was Dundee's tall Irishman, Colonel Pearson, dripping with everyone's blood but his own. The sword in his hand was half again as long as another man could have wielded. He looked wildly about him.

"Have ye all gone home?" he roared angrily. "Ye shameless—" a little Englishman of Mackay's popped up like a conjurer's rabbit from beneath Pearson's feet and scurried away. The Irishman bellowed wordlessly and took after him. Val laughed again.

The noise of the affair grew slowly as men separated themselves into units once more to load and loose off their weapons. The Highlanders in the center of the long broken lines of conflict drew back for breath. Val was carried back in the surge of the men about him. He had some difficulty with his horse, who desired strongly to go forward. A man put his hand on the horse's neck.

"Lend me your mount, captain," panted Viscount Dundee.

Val swung down and stood by his stirrup while the Scotsman mounted. He looked down at Val. "Preserve yourself, captain," said he lightly, "I must hear the lave of that song after this is through." He galloped off, shouting encouragement to his men.

In the comparative calm of the little space he stood in, Val drew deep breaths through his mouth and flexed his saddle-cramped muscles. The hell about him was unabated.

He was not surprised when, rolling over a body near him to look for weapons, he was confronted by the staring stupid gaze of one of the Nazi saboteurs. Which was this one—Locke? Yes, that was it, Gilbert Locke. He had evidently died in a great deal of agony. His contorted face was not attractive with its hardening streaks of vermilion. Val searched the body impersonally, quickly, discovering a nearly full automatic. He slipped it into his pocket.

Joining himself to a contingent of Highlanders, he marched with them toward the river behind a piper who blew lustily the Cill Chriosde, the pipe tune of Glengarry. They moved forward relentlessly, hacking and stabbing, some dropping by the way and other clansmen uniting with them as they passed through the struggle. Dundee had long since disappeared in the haze.

Suddenly and without warning there burst upon their little force a rush of horsemen, a remnant of the Earl of Annandale's troop of horse, coming at full gallop from the river. The Highlanders held, broke, then fell by twos and threes as the horsemen cut them down. Val was tossed over and groveled momentarily beneath the hoofs of many beasts; he lost his grip on his claymore and a blow on the side of the head dazed him. The wounded Scots about him were dragging men off their horses in one last effort for Dundee, thrusting and stabbing at the riders, knifing the horses' bellies when they could reach no higher, making their last endeavor to smash the Lowland armies for good and all. A man on the turf at Val's side pawed at him weakly.

"Eh!" he grunted, and spat teeth. "T' fraoch gorm! T' fraoch gorm!" Gesturing feebly toward the left, he collapsed in a red heap.

Val lifted his bruised body, peered, shook his head and saw fiery galaxies whirl. He crouched on his knees and hands until vision returned.

The thing the dying Scot had indicated was a long spear, sporting a bunch of wild heather tied to its point, which was stuck at that moment haft down in the turf a few feet away. Val recognized it as the emblem and standard of the great clan Donald, under Glengarry, Keppoch, Macdonald of Sleat, Glencoe, and young Allan Macdonald. He crawled toward it, grasped the slim haft and pulled himself upright. The spear shattered near the middle of the shaft under his weight, but Val staggered erect and waved the emblem drunkenly.

"Donald!" he bawled at the top of his voice. "Donald, to me!"

The clansmen near him took it up. "A Donald! A Macdonald! To me, to me!"

A Lowlander rode at Val, sword flailing. Val drew the German automatic and dropped him out of his saddle with a clean shot between the eyes.

"Donald! Hi . . . eeaugh, a Donald to me!"

A piper with a carven face who had up till then been virtually dead

sat up, wavered, dragged his instrument into position and began the gathering call of one of the Donald septs; a horseman shot him through the back and killed him for good, and Val leaped for the horseman as the latter swept by, dragged him out of the saddle and crushed his skull with a handy rock. Another clansman picked up the pipe and swung into the tune again. An arrow from somewhere pierced the bag. The piper cursed vividly, obscenely, as the tune perished in squeals and moans. Donalds of various kinds came running from all points of the compass, and the horsemen were massacred.

Val handed the spear with its heather bunch to a Highlander near him and strode off, albeit a trifle wobbly, in search of Dundee.

About him the combat raged—Val realized the accuracy of that trite old phrase now—it really raged, like some great many-headed

monster tearing itself to shreds in an access of terrible anger. Single men did not stand out. The engagement was a unified whole, a single living amoeba of men held together invisibly, in which he could pick out friend from foe only when he recognized a face here and there. Consequently, he seldom fought except when attacked, and often wondered as he stepped over a fallen contestant whether he had lessened the enemy's forces or his own.

He had picked up a broad blunt sword somewhere, and with it he killed and killed until he grew so weary of killing he sat down on a rock and ignored the whole scene for some minutes.

He had no conception of the true length of the battle of Killiecrankie. It seemed ages of bloodshed compressed into several minutes—actually, it lasted little more than a half hour. Mackay's men were steadily beaten back until they stood in groups and clusters on the banks of the Garry, where they died or leaped over and swam for it. The river's edge was an insane shrieking farrago of men and horses perishing together. Val had paused again in a comparative lull, leaning against a thick-boled tree, when he saw the four Nazis coming at him.

Allan Macdonald, less his stallion, materialized at his left hand. "Here's an auld freend o' yours or twa, Sassenach, come t' pay us a ca'," he said out of the side of his mouth. The young captain of Clan Ranald looked fit and sleek, his tartan unsullied, his sporran still pure white, his hands clean, but his long sword scarlet to the hilt. He winked slyly at Val.

"No friends of mine, as I've said before," panted the Englishman.

"Eh! This time I believe you," answered the Scot.

"So do I," said another voice. Dundee himself reined in at Val's right.

The four Nazi saboteurs halted some twenty-five feet away across the corpse-strewn ground and stood staring at them. Sir George, his cheeks incarnadined and puffy, scowled menacingly.

"Lake," he grunted, asthmatically breathless, "you filthy English swine, you lied to us."

In spite of himself Val gave a peal of laughter. "I wish, sir, you could catch the humor of that remark coming from one of *these* gentlemen," he shouted sarcastically to Dundee.

Keith Morton barked like a mad dog. "You—" he was reaching for his shoulder holster when Lord Gordon-Knight held up a warning hand.

"Let's hear first why this scum of the British Isles lied to us about the fight," he snarled. "Talk, Englishman, talk."

"And what shall I talk about?" Captain Lake was grim now.

"You specifically told us that the fight was won by this Mackay; you said that your silken comrade there died and his king's hopes were lost on this battleground. Well? Do you deny it?"

Val paled. "No! I told you that—but not that Mackay won.

Mackay's forces were so hopelessly beaten that by nightfall they couldn't have whipped a puppy." His tired brain dwelt fleetingly on the question of what tense he should be using. "It was because Du— because *he* died that James Stuart lost the cause. The battle was won, but the greatest leader was gone."

Murchison, he of the sour mein, spoke into the silence that held them all when Val had finished. "So. You spoke in . . . uh, double-talk."

"Not at all, Nazi. I told you that the cause was lost on this field. I told you the truth. You misinterpreted it and joined the side doomed to a crushing defeat here and a complete victory afterwards."

Dundee's clear features had darkened and his eyes grown bright and dangerous. He had, luckily, not realized the import of most of Lake's words. "Look to yourselves, whelps," he spat at the Germans. "You are going to die soon."

Allan Macdonald's point came up. Dundee drew his sword and Captain Valentine Lake stiffened his arm and swung his claymore to point it at Keith Morton. The three stood for a second, then, simultaneously, went into action.

"King James and the Kirk o' Scotland!" Dundee shouted as he stood up in his stirrups and swung his claymore over the horse's mane. "The Highlands—to Dundee!"

Val and Allan Macdonald, cursing unconsciously, fiercely, raced across the short space at the Nazis. Sir George, who had lost his gun, had turned and was puffing up the slope away from them in a panic; Sir George had not been built to stand unarmed against such specters. Lord Ralph Gordon-Knight, Hermann Frick of the Gestapo, crooked his legs slightly and drew his gun. Keith Morton had his automatic out and Murchison was in the act of pulling his from its holster. With a shock of despair Val saw they could not cover the ten remaining feet swiftly enough. He jerked his arm back almost without thinking and threw the claymore like a javelin. It caught Morton in the apple of his throat and extinguished him like a snuffed-out candle flame.

Dundee was in front of the two now and had lifted his sword arm in a high swing. Gordon-Knight fired from the hip unhurriedly; the Scot swayed and dropped his claymore. His horse galloped past the Nazis, Dundee reeling but holding to the pommel. Gordon-Knight fired at Val. The bullet cut his ear. Allan Macdonald had cleared the open space in one great bound and closed with Murchison, whose automatic snapped futilely at the clouds. Val grappled with Gordon-Knight, his heart sick in his heaving breast.

The German struggled silently, his hands pinned to his sides by the officer's arms, his pistol temporarily useless. He brought up his right knee sharply, but could not get enough space to do any serious damage. He flung himself back and forward in the other's grasp, striving to break it and use his pistol.

His right arm was suddenly

wrenched free; he lifted it and aimed the weapon carefully at Val's head. A split second before he could pull the trigger a snake of steel licked out before his eyes and the light of the sun went out forever.

"Thanks," coughed Val, releasing the German's limp body and staggering back. Allan Macdonald sheathed his sword.

Val glanced at Murchison, who lay face down in a pool of blood, then limped toward Dundee. The Scot was sprawled over the body of a clansman some yards away. Lake and Allan went to their leader.

Dundee was not dead. The shot had struck him in the right side below the heart; very little blood stained the torn gray silk. He was unconscious.

Allan Macdonald tenderly laid him out straight on the heather, and the two knelt beside him. The dying battle was forgotten for the dying chief.

"Dundee," murmured the young Macdonald. "My lord?"

He opened his eyes and stared unseeingly up at them, then memory came and he smiled wryly. "Well, Allan, how goes the battle?"

The Macdonald wept unashamed. "The ficht is won, my lord, but . . . I am sorry for yersel'."

Dundee made a feeble effort to snap his fingers. "So long as the cause goes well—" He glanced at Val. "Captain Lake—" The weak voice trailed off and for a moment they thought he had died. Then, "Are there many verses I didna hear?"

By a powerful effort Val tore his mind back from the death scene. "Just one more, my lord," he answered.

"Wa . . . wad ye sing it the noo?" The Scotsman had forgotten his English training at the last.

Val cleared his raw throat and the last verse of Scott's song went up, hoarse and cracked, to the early evening stars.

He waved his proud hand and the trumpets were blown,
The kettledrums clashed, and the horsemen rode on—

Black Donald Balloch's pipe-major came behind them from nowhere and took up the tune softly on his pipe:

Till on Ravelston's cliffs and on Clermiston's lea
Died awa' the wild war-notes of—
Bonnie Dundee.

Come fill up my cup, come fill up my can,
Come saddle my horses, and call up my men;
Come open your gates, and let me gang free—

For it's up with the bonnets of Bonnie Dundee!

The leader smiled painfully.

"A gude song, avic, a richt bonnie song—"

And so he died.

The Seannachies, those who tell of the death of a great clan's chief, were already lifting their extem-

poraneous wails in the gathering dusk. Val Lake wearily climbed the green-red slope of Killiecrankie. He left behind a broken-hearted young man and a weeping piper mourning beside the corpse of King James' final hope. The field was won, the cause was irretrievably lost.

In the gloom he stumbled over something and from his hands and knees saw without any emotion the dead face of Dallingford, the German who had claimed he was not a Nazi. Dallingford's pistol was in his cold hand. Val did not take it. He stood up and walked on, recalling the brief glimpse he had had of the saboteur in the heat of the battle, wondering in a negative way what twisted philosophy the man had evolved to make him go heedless through such a hell, searching for someone or something.

The vision of scrambling Sir George came unbidden to him, too. Likely Allan Macdonald would seek out that plump gentleman and deal fittingly with him. He stumbled and fell, utterly weary, and rose again and went on. He reached the crest of the hill.

Sluggishly startled then, he drew a filthy hand across his face and peered to the south. Perhaps a half mile distant, enshrouding the darkly beautiful green turf beyond the battleground, lay a crawling adhering mass of the emerald fog, billowing toward him slowly. He rubbed his eyes foolishly and stared once more. It was there all right, the same time-devouring fog into which he and eight Nazi saboteurs had stalked that very morning. He hesitated. Behind him some wild banshee of a bagpipe rose in the strains of "Bonnie Dundee". His deadening mind went round in the wheel of thoughts again.

He taught the tune to a piper in 1689—the tune went down the years until Sir Walter Scott put words to it in 1830—then in 1940 he went backward in time like any science-fiction johnny and taught it to the piper, who . . . who—he caught himself nodding, and jerked his head up, chin thrust out. But who wrote the thing anyway?

He stood hesitating, weaving, almost collapsing on the top of the hill. Suppose, now, this fog ended at home in 1940? He began a shiver, then changed it abruptly to a shoulder-stiffening gesture of defiance. After this hell's slaughter of Killiecrankie, couldn't he go back to London to take the Jerry's bombs and like 'em? He could! He snapped erect, Captain Lake of the Royal Fusiliers.

He marched off down the hill. The fog might be gone, dissipated in the rising wind before he reached it. He strode faster. Far away behind him he heard the wailing song he had brought to the Highlands; it was mourning Dundee.

The fog retreated a little, its edges growing thinner and more ragged. He broke into a tired shambling trot. Then he saw that a part of it was waiting, stretching out long groping tentacles.

He knew he would reach it now.

THE END.

Atomic Age

(*Continued from page 6*)

power. Some writers have proposed that this will mean "cities of the future, if they are to be safe, must be underground"—which is sheer balderdash. It's a perfect acknowledgment that the writer doesn't even vaguely know the score. The man who says any such thing is blatantly admitting that he believes that mere mechanical strength of material can defeat the power of the atomic bomb.

Of course, part of the reason for that misapprehension is that the bombs dropped on Hiroshima and Nagasaki were the first ever made. They were the weakest, crudest, least effective atomic weapons that will ever be used. Those who have followed the discussions of atomic power and atomic weapons in Astounding will certainly recognize that the United States Army, in applying its available atomic arsenal to the purpose of forcing the Japanese to defeat, consciously and carefully selected the least damaging, gentlest application of the terrible agency at their disposal. Then that manifestation of the weapon—the simple energy bomb—was applied in the least damaging possible manner; it was set off in the air, not on the ground.

Talk of cities safe underground is nonsense for the very simple reason that atomic powers are such that, if the rock is solid enough to resist the titanic blow of atomic detonation, the delicate isostatic balance of the Earth's crust can always be upset. If the city can't be reached directly, it can be destroyed by earthquakes.

Personally, I'd prefer being above ground, a long, long way from any target of sufficient concentrated value to merit the attention of the atomic bomber.

Everyone knows that the first atomic bomb was the death of the city of Hiroshima.

It would probably save a lot of lives if they would recognize that it was, equally, the death of every big city, the death of an era, and the death of a cultural pattern based on a balance of military power, controlled exclusively by big and wealthy nations.

Atomic war is as suicidal as a duel between two men armed with flame-throwers in a vestibule. Neither party can have the slightest hope of surviving.

The atomic weapon is, to nations, what the revolver was to the men of the old West—the Equalizer. It didn't make any difference how big you were; the gun makes all men the same size. The atomic bomb makes all nations the same size.

And, just as the revolver produced an era of good manners or sudden death, the atomic bomb must, inevitably, force upon us an era of international good manners and tolerance—or vast and sudden death.

When the peoples of the world fully—both intellectually and emotionally—realize that, we may get somewhere.

THE EDITOR.

V-2

The Road To Space

On Page 99 is the picture of the trail of a V-2 rocket cargo ship—cargo: sudden death, to be applied without warning out of a silent sky—on its way up. Such photographs are rare, and poor indeed. The Nazi-taken photographs, of much better quality and greater interest, no doubt, aren't available to us, as yet. But last month we carried a letter from Jerry Shelton describing the take-off of a V-2 as seen from the ground in the black of night; this photograph indicates his observation was acute and accurate. The trail is evidently a staggering thing, not unlike the symbolic lightning-flash of the artist and cartoonist.

As suggested last month, a possible explanation is the inherent instability of any chemical reaction as violent as that involved in a rocket motor. A further explanation is, perhaps, that in many ways the standard rocket design is as nonsensical in its own way as is the standard automobile design. An automobile engine should, obviously, be as close to the driving wheel as possible; since rear-wheel drive has proven more practical, in engineering simplicity and reliability, then rear-engined cars should be built.

With rockets, a rear-motored design puts the center of mass ahead of the center of thrust—as pretty an invitation to stability as can be imagined. The front-motor rocket would have the obvious advantage that the center of thrust would lead the center of mass, and produce an inherent stability, instead of inherent instability. Of course, there is the slight difficulty of getting the rocket blast away from the ship—

If rear-drive rockets are used, some type of gyro-controlled balancing mechanism must be used. Since V-2 is traveling upwards at an enormous speed, and a constantly increasing speed, the gyro mechanism will be operating under the equivalent of many gravities. Its corrections must be applied with enormously high reaction speed, and with brutally violent force. No mechanism capable of applying the several-tons correcting forces required is going to be free of overshoot and hunt when operating in the small-fractions-of-a-second fashion essential to balancing a V-2 on its ultimately unstable support—a jet of incandescent gas. Particularly when the prime requisite is assurance that the V-2 will *not* do a 180° loop and return to its take-off point.

The problem is something roughly approximated by an effort to balance a solid steel telegraph pole on a ball bearing on Jupiter. If we add that the ball bearing is on the deck of a ship in a Jovian typhoon, the approximation is perhaps closer. But we'd still be missing about 5 G's acceleration—

Part of Jerry Shelton's complaint that the jerks involved in correcting course are too violent to permit living passengers, is answered, however, in the equally cogent comment that the acceleration used in V-2's take-off is a bit more violent than men would care for. Cutting down the acceleration would greatly ease the violence of the corrective forces.

THE EDITOR.

Wanted: A Tube

by LAWRENCE BRAYMER

***The** 100-inch Mount Wilson telescope has already achieved results that, it was originally hoped, the 200-inch Mount Palomar reflector [illegible]. It was done by improved photographic plates, improved techniques—better accessories. A vastly greater increase in effectiveness would be made possible by the development of a single type of tube—or of an amplifier,*

Ninety-five years ago Bond and Whipple exposed a plate at the focus of the Harvard 15-inch telescope and obtained the first photographs of the star-fields. Up to that time telescopes had been built to fit the human eye. Everything we knew about the universe had been deduced from an enormous number of visual observations by astronomers who "looked through telescopes all night and did arithmetic all day." The idea of forcing a group of stars to register their positions and characteristics by their own light for permanent records was such a time-saver and yielded so much more knowledge than the visual method that it has by now almost completely supplanted visual work.

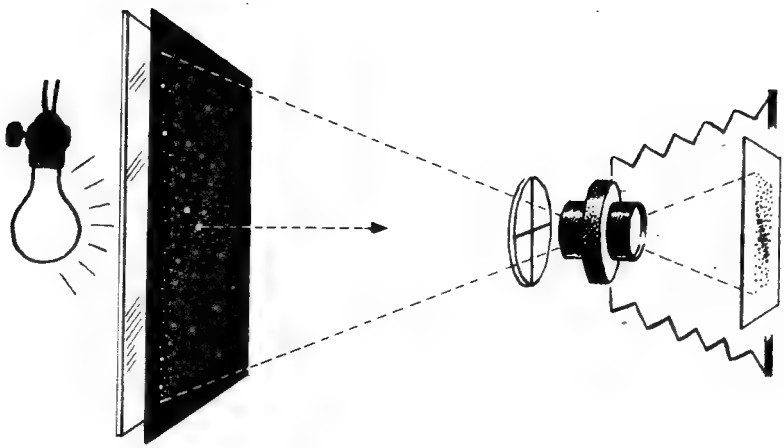
If today practically all astronomers take pictures of stars instead of peering at them through the chilly night, we would expect to find an equally impressive advance in technical methods, nor are we at all disappointed. It is interesting, however, to find that in some ways the latest photographs of the stars are not so very much better than the first.

The main difference, of course, between the old and new methods, is the basic difference between the eye and the camera. The eye can see an extraordinary dim light, about ten quanta, they say, but vision is instant, with no time lag; our retinas are stimulated and they respond as fast as the nerves of sight can carry an impulse to the brain. But incoming light must exceed ten quanta, or the eye cannot react. The camera, however, can accumulate light by time-exposures. The sensitive crystals of silver salts embedded in a layer of gelatin spread on glass or celluloid are able to soak up light, quanta by quanta, like little sponges, until some of the silver salt crystals have had their fill and oblige us by turning black in a developing solution. Just why this happens is not fully known, but it is amusing to find that a buttercup is involved. It seems that gelatin is made from the connective tissues of cows, and cows eat enough yellow buttercups to store a trace of sulphur compound in their gristle. This trace of sulphur was found to be necessary before the little silver crystals can do their stuff.

Telescopes computed for the eye were soon adapted to their new career as cameras. Refracting telescopes, as most of us know, are big spyglasses that bend light by passing it through glass. They cannot bring all colors to the same focus, so we compromise by a design that, for visual use, focuses the wave lengths to which the eye is most sensitive and disperses the others, notably blue and violet. Since blue and violet are best liked by the photographic plate, large refractors have been specially computed as camera lenses for the blue, and are still doing notable work. The operator guides them by a visual refractor alongside. Adding a third lens may convert a visual refractor to photography, or, in certain cases, filters may be used.

Newton had invented the reflecting telescope, and others had im-

The spiral nebula Messier 81 in Ursa Major. Photographed March 21, 1917, by G. W. Ritchey with the 60-inch Mount Wilson reflector. Ritchey's work with this instrument, which he constructed, was remarkable due to his enormous interest in securing the smallest, sharpest possible images.



The set-up used to produce artificial "bad seeing". An artificial constellation, free of bad seeing defects is at the left; the "telescope" at the right.

proved it in the course of more than two centuries. Since it bounced light mechanically from a curved metal surface, all colors of the spectrum landed at the same point—theoretically. But mechanical difficulties usually prevented this type from successful competition with the refractor until the advent of picture-taking.

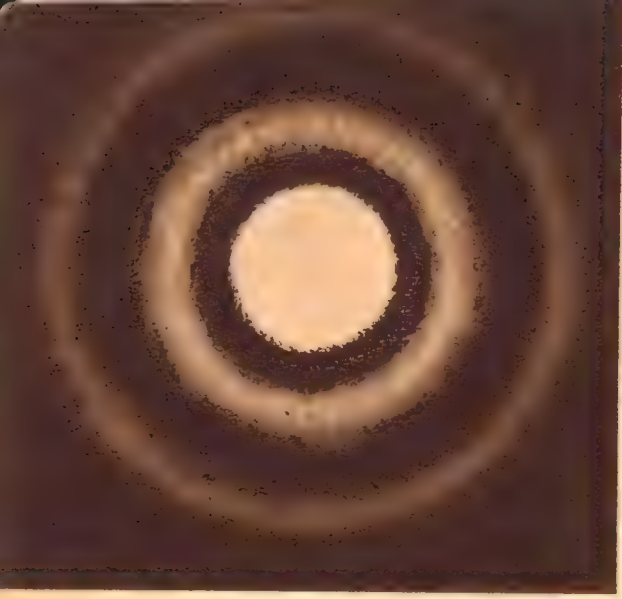
The photographic revolution called for bigger and better pictures, and this meant bigger and better cameras. In size, the Yerkes 40-inch refractor is still the world's largest and is computed for visual work. It was felt that larger lenses would bend under their own weight while they were pointed at various angles and no one tried to exceed the 40-inch—excepting the French, who figured out a way to mount a 50-inch refractor—invented by Foucauld—of enormous length, horizontally, and to feed starlight into it by a rotating mirror arrangement. This arrangement was set up for the Paris Exposition in 1900; but somehow the 50-inch disks never got their final "figure," and in the middle twenties the unfinished glass was still in Paris.

The mechanical refinements necessary for celestial time-exposures have brought about the huge reflectors of today. To follow the stars in their apparent courses meant neutralizing the spinning of our earth on its axis. Jerky clock-drives were replaced by precise mechanisms geared to large diameter wormwheels, most exactingly made. Mountings were carried on precision bearings, and some, like the 60- and 100-inch at Mount Wilson, were floated on tanks of mercury, so that the bearings may mostly guide, rather than support. Attention to mechanical design permits carrying great glass mirrors on lever systems in rigid tubes that

Test negative exposed in focus, with no disturbance introduced, save for plastic disk with crossed lines.

Test negative exposed in focus—but with simulated bad seeing. Note that individual stars shown on Page 105 have become nebulous wisps.

Test negative exposed with no disturbance, but with film at a plane ahead of focal plane, severely cutting ray cones. Effect is markedly different.



Real appearance of perfect diffraction image from clear circular aperture.

Distribution of energy in diffraction image.

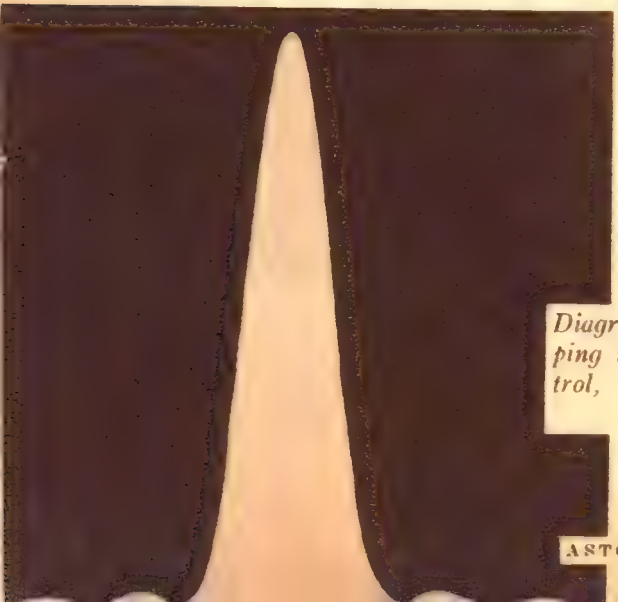


Diagram showing effect of overlapping images; assuming closer control, center intensity would be increased.

excellently maintain optical alignment of mirror systems weighing tons.

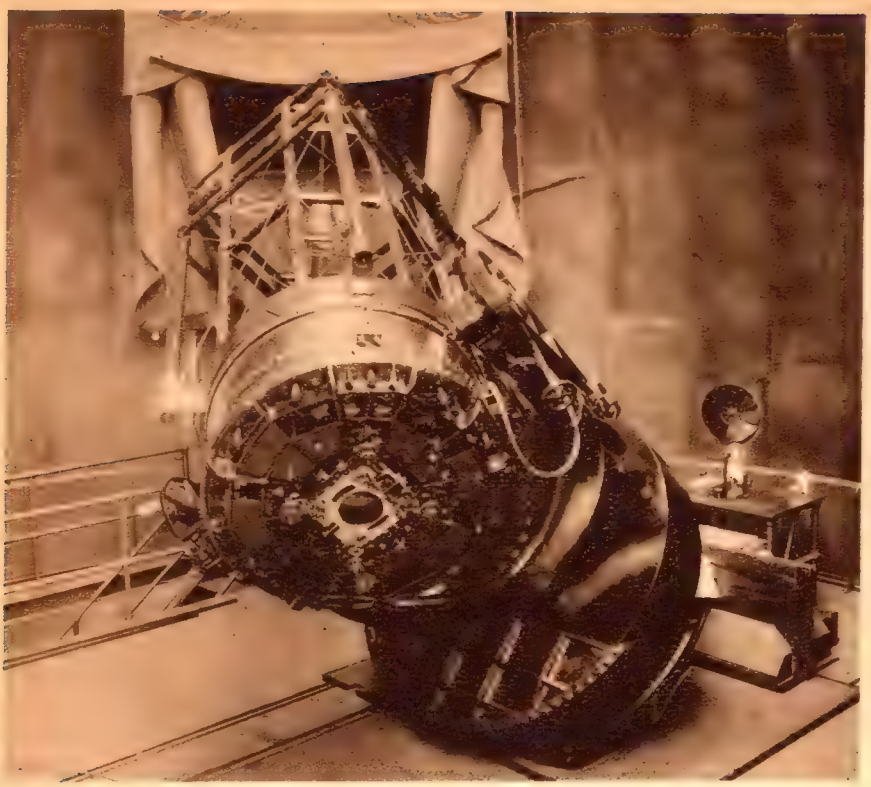
We have called in the engineers and they have delivered engineering masterpieces. The 200-inch tube was a problem in structural steel—the great yoke slides on oil under pressure, a technique developed for absorbing the thrust of marine propeller shafts; electrical engineers have arranged things so that the huge precision-balanced mass of the great instrument responds to the touch of a pushbutton. It is not improbable that remote control techniques now aiming gun batteries by radar will be used before long to control great sky-cameras even more elegantly.

Thus we find ourselves with light collectors of great grasp that can follow celestial objects almost perfectly. We can gather large quantities of radiation from a distant sun and keep it pouring onto exactly the same spot on our sensitive plate. That is, we can keep it on *almost* the same spot. All of our fine equipment still leaves us facing just what Bond and Whipple faced ninety-five years ago: "Sky fog" puts a time limit on our exposures, and the stars have a nasty habit of twinkling. By sky fog we mean the all-over fogging of plates as a result of exposure to the night sky.

A short-focus fast Schmidt camera may fog a plate in twenty minutes, while a long-focus 'scope may expose six or seven hours, but rarely longer. For the night, alas, is not quite black. The sky is faintly luminous. Radiation from outer space agitates the molecules of our gaseous envelope until some of them glow; we occasionally even see a fine Aurora as far south as Virginia. On every clear night there is enough glow and scattered light to fog a negative, if we place that negative at the focus of a big light-collector. Exposure times for the big Mount Wilson mirrors have been seriously curtailed by the glow in the sky from Pasadena, as the city expands.

A table, derived from observing this effect of sky-fogging, shows that there is a "limiting magnitude" of stars that can be charted by a given size telescope. A certain aperture may expose for, say three and one half hours, before sky fog becomes serious; in this time, stars of perhaps the sixteenth magnitude have impressed developable images on the plate. We must stop before the seventeenth magnitude stars have affected the spots they were hitting on the plate; the eighteenth magnitude images would hardly have had a chance even to "warm up" their places on the emulsion.

This is bad enough, but the real villain is bad seeing. The air is in motion above us. It is hot and cold and hot again, in layers; the layers of gas mix and moil around and bend the light from outer space. When the stars twinkle brightly, it looks great to the eye and is no doubt most romantic, but the astronomers will not bother with picture-taking on a night when "bad seeing" prevails. Half the atmos-



The Naval Observatory 40-inch Ritchey-Chretien wide field reflector. An example of unusual mechanical compensation. Mercury flotation is used, and a counterbalancing outer tube carries levers that nullify flexures of the octagonal inner tube. The large double-slide platcholder is shown without the big circular plate.

phere by weight is in the first three and a half miles up. Forty-nine per cent more extends only to twelve miles. So there is quite a gain in steadiness and transparency if we can observe from a mile or so above sea level. The rest goes up, roughly, for a couple of hundred miles—no one seems sure just how far. It is the first dozen-mile stretch that makes trouble for us while it is making our weather.

The astronomer may follow and guide as he will, but the focused cones of starlight during bad seeing dance around over large areas. Visually, a star image is not always the pretty circle of light with neat rings that Airy investigated; it is often apt to look like what someone described as a "fried egg dancing around and occasionally exploding."

Large telescopes suffer most from

(*Continued on page 123*)

"...Giants In Those Days..."

by WILLY LEY

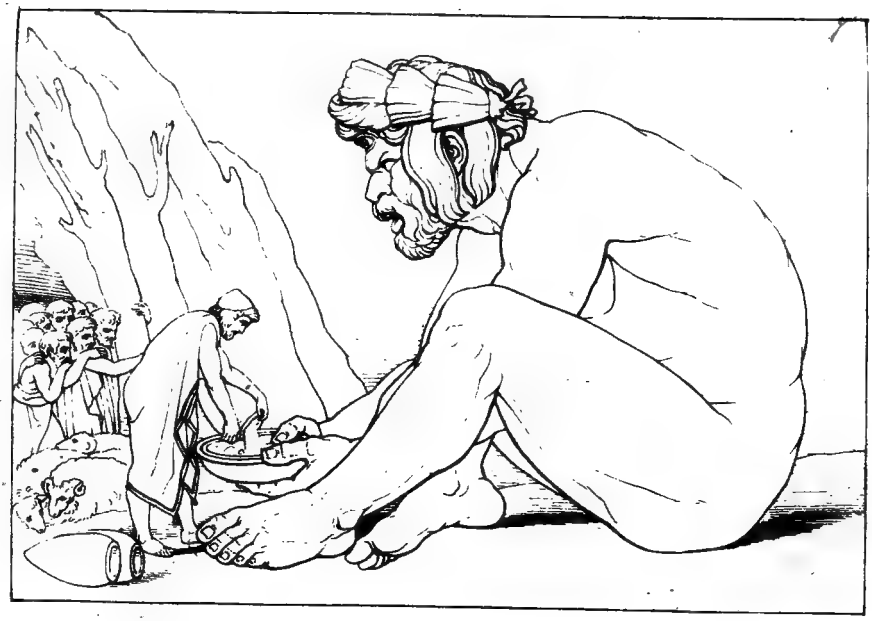
***Superman** was invented long, long ago—only they called him a Giant in those days. They'd dig up evidence to prove it, too, every now and then—bones, unquestionable bones, that indicated the original user had stood anything up to seventy-five feet high. Bones, yes, but human—?*

It was on May 9, 1944, that Dr. Franz Weidenreich of the American Museum of Natural History read a paper before the American Ethnological Society in New York which not only threw that assembly into a polite uproar but which, no doubt, will be quoted under the heading of "first report" in scientific books as long as scientific books are written. What Dr. Weidenreich told the assembled ethnologists amounted to nothing less than a scientific corroboration of that single but oft-quoted passage in the Bible which says that "there were giants in those days."

"Those days" means the early and middle Pleistocene, or about the interval from 750,000 BC to 400,000 BC. As to the locality we know that giants lived in Java and in southeastern China and we may presume that they could also be found elsewhere. The evidence, so far, rests on only a few finds which are unfortunately very fragmentary and will remain so until the Japanese have been taught that war doesn't pay and that their home is on their islands and nowhere else.

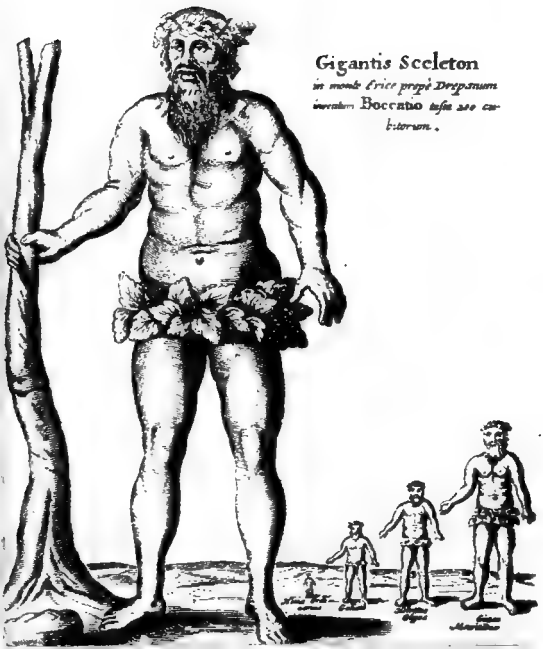
The story of that discovery began a little over fifty years ago in a place which has received the unflattering name of "the Hell of Java." A Dutch physician, Dr. Eugen Dubois, who lived on Java and was interested in fossils began to investigate some old riverbeds near Trinil. These riverbeds were full of bones and fossil mammals, belonging, in Dubois opinion, to the very latest part of the Pliocene which is, in turn, the latest of the four subdivisions of the Tertiary Period. (Meanwhile it has been ascertained that they are slightly younger than Dubois believed.)

The abundance of fossils was easily explained, then as now one of



Polyphemus drinking wine, from an English edition of the Odyssey (1834).

(From Merian's *Theatrum Europaeum*, 1647.)

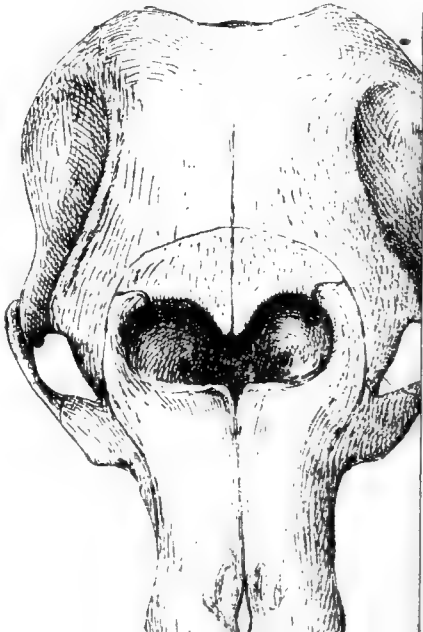


"Giants," a plate from Athanasius Kircher's Mundus subterraneus *(1678). The largest figure refers to the skeleton described by Boccaccio; the third, labeled* Helveticus Gigas *refers to the so-called Swiss Giant; the smallest figure is labeled* Homo ordinarius.

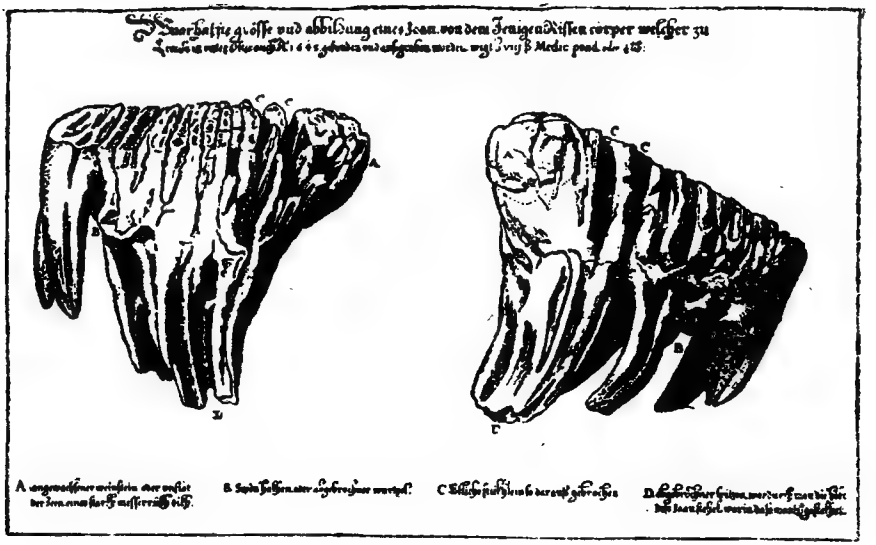
the numerous volcanoes of Java had had an *"uitbarsting,"* as the Dutch call it, and had buried large herds of animals under mud and hot ashes. In fact Dubois and some other investigators blamed one particular volcano in the neighborhood, Gunung Gelunggung—its very name sounds like volcanic thunder—with having caused the local catastrophies. And among the fossils found there was the cap of a skull, a piece of a jaw and a femur, which caused a storm all over the world, a storm which has subsided only recently.

These three remains, Dubois said, are remains of the "missing link" prophesied by Charles Darwin, the intermediate form between apes and Man. Consequently he named the mammal to which they had once belonged the *Pithecanthropus erectus*, the erect—walking—ape-man. One cannot quite imagine nowadays how enormous this announcement was. Small wonder that several parties formed quickly, even before Dubois had published a complete description of his find which, it must be admitted, took him a rather long time, close to three decades. One party accepted Dubois' statement. Another agreed generally but said it was merely an exceedingly primitive man, with a brain capacity exactly halfway between the smallest-brained normal people of today and the largest known ape brain. A third group stated that it was merely an especially brainy ape and a final group insisted that the skull fragments and the femur did not belong together —they had been found about thirty feet apart—and that the femur was human while the skull fragments were those of a high ape.

That discussion, which did not come to any real conclusion then,



Skull of an elephant, seen from the front. The big hole which looks like two joined eye sockets, is actually the nasal opening, while the real eye sockets are hidden behind the supra-orbital ridges. Finds of such skulls probably originated the Homeric story of Polyphemus.



One of the molars of the so-called Giant of Krems, found in 1645 near the Austrian city of Krems during the building of fortifications. There is no doubt that it is the molar of a woolly mammoth (Elephas primigenius).

lasted well into the new century. And during all the many years Dr. Dubois needed to finish his monograph on Pithecanthropus no additional fossil evidence came to light. But then one Dr. Black turned up with ancient skulls from the vicinity of Peking. They were more complete than Pithecanthropus and there was no doubt now that their original possessors had been human even though of a lower type than known up to that time. The name became *Sinanthropus pekinensis* and the relationship between Sinanthropus from Peking and Pithecanthropus from Trinil on Java could be established, too—they were the same type, very closely related to each other and possibly even identical.

This was fine, not only was Pithecanthropus established as a very primitive hominid, it was also established that the form had lived over a considerably extended area in southeastern Asia and presumably over most of Insulinde, the archipelago of which Java is a part.

In 1928 another Pithecanthropus skull found near Trinil provided further evidence. Eleven years later one of the native collectors of Dr. von Koenigswald of the Netherland's Indies found another fossil of Pithecanthropus, this time a jaw. Then trouble began anew. The new jaw looked like Pithecanthropus and Sinanthropus all right, except that it was too large, larger than any other human jaw, fossil or modern.

Other similar fossils followed and Drs. von Koenigswald and Weiden-

reich had to make a decision. There had obviously been two types of Pithecanthropi, the skulls of one much more massive than the skulls of the other. Were they two types or merely male and female? Conservatively it was decided that the more massive ones had been the males of the tribe. Only a few years later Dr. Weidenreich had to reconsider, and decided to call the "males" *Pithecanthropus robustus*. The reason for reconsidering the earlier decision was still another jaw. It proved to be more primitive in its characteristics—mainly in its dental characteristics—than anything else known. It also was much bigger than anything else known.

It was clearly an entirely new type of early humanity and Dr. von Koenigswald called it *Meganthropus Palaeojavanicus*, the "Big Man from Old Java." There was no doubt that it was big. "We shall not fail," said Dr. Weidenreich, "in estimating that Meganthropus reached the size, stoutness and strength of a big male gorilla."

A man, or rather a savage, of the size and strength of a big male gorilla, but much more intelligent than a big male gorilla is a frightening idea indeed. But worse was to come.

And now we have to go into Chinese medical lore.

A Chinese pharmacy looks, generally speaking, rather like our own of a hundred years ago. It contains herbs and herb extracts, salves and seeds. But there are also many drawers full of lung-tchih and lung-koo, dragon bones and dragon teeth. They are finely ground and go into pills and potions and if you are to trust the apothecary there is no such thing as a sickness or disease which will not be cured by one of the lung-tchih or lung-koo. Ever since scientists learned of this they have rummaged through these drawers whenever there was an opportunity to do so and a fair amount of fossil bones and teeth in our collections and museums was not found but purchased in an apothecary's shop in Inner China. The dragon bones and teeth are actually fossils from the interior—the precise sources are kept secret by the Chinese—and they are usually from Tertiary mammals.

Drs. Weidenreich and von Koenigswald did not fail to rummage through such drawers and boxes too, whenever they could. One of the finds made in this manner is a big human tooth. Another tooth followed a while later. And then a third. The volume of these molars is about six times that of the corresponding molars of modern man, or twice that of the volume of corresponding teeth of gorillas. Dr. von Koenigswald called the species *Gigantopithecus*, "giant age," but Dr. Weidenreich, in pointing out that the structure of the teeth does not agree with those of apes, but does agree, even in minute detail, with that of Sinanthropus and Pithecanthropus and even with that of modern man, it should be *Gigantanthropus*, "giant man."

If the teeth alone are accepted as an indication of the total size—as they well may be in this particu-

lar case—the size of Gigantanthropus was *twice that of a big male gorilla.* There *were* giants in those days.

To understand the impact of this discovery we have to go back through modern history. It is full of giants, but they were not real ones, they were imitation giants, conceived by an existing belief and borne out by spurious evidence. I am not even speaking about deliberate hoaxes like the so-called Cardiff Giant which was a sculpture in stone, somewhat "aged" in the ground and then exhibited for money until scientists exposed the fraud. I am speaking of honest misunderstandings.

One of the classical cases of this kind can be found in an old book, Merian's *"Theatrum Europaeum"* of 1647. There is a chapter devoted to the Giant of Krems—a city in Austria—and it begins—translated—as follows:

"In the year 1645, around St. Martin's Day, when the Swedes occupied the city of Crembs—Krems—those people built, in addition to other fortifications, a stronghold up on the mountain, near the old round tower, but found that rain water would harm the work: therefore they dug a ditch to carry away such water as might come. It then happened that they, in that ditch, about three or four cubits below the surface, found in a soil that was yellow but somewhat blackened by the putrefaction of flesh, a gigantic large giant's body, of which—while the work progressed and before it had been recognized as a body—the head and some limbs had been destroyed because everything was soft and rotten with age and decay, but still many parts remained that were looked at by learned and experienced men and were declared human limbs. these parts were salvaged and sent to Sweden and Poland . . . A few parts, among them a tooth weighing some five pounds, were kept in Crembs, and could be seen in the *orator* of the new church which the Jesuits had built up on the mountain. It is also reported that two other giants' bodies, although somewhat smaller, had been found, but since the digging was pursued only as far as required by the necessity of the fortifications, said bodies were left remaining in the depth of the soil . . ."

Fortunately the author of the book, Merian, pictured the five-pound tooth and because of that there cannot be the slightest doubt that the Giant of Krems was actually a specimen of *Elephas primigenius,* the Woolly Mammoth.

A very similar discovery had taken place about a century earlier near Lucerne in Switzerland and hence goes under the name of the case of the Swiss Giant or the Giant of Lucerne. It had been found in 1577 under the roots of an old oak tree, finally felled by a storm. The local authorities, civil and Church, wondered whether the incomplete remains were animal or human and whether they, in the latter case, were deserving of a Christian burial and called in a famous man of their

day, one Dr. Felix Platter of Basle. Dr. Platter viewed the remains and pronounced gravely that they had come from a giant nineteen feet tall. They were placed in the Town Hall, waiting to be seen by a man who really knew anatomy. This happened around 1800 when Professor Dr. J. F. Blumenbach of Goettingen paid a visit to Lucerne. One glance was enough for Blumenbach, and the City Council had to learn and digest the fact that there had once been a member of the elephant tribe called *Elephas primigenius*.

There are many such cases—among them the fake remains of Teutobochus, King of the Cimbry, allegedly found in a grave thirty feet long—but whenever the remains "survived" and could be examined by anatomists, or even when only good pictures were left, it was found that mammoths and mastodons had been the originals.

To show that this tendency did not constitute a monopoly of Bible-reading medieval Europe I would like to quote just one more case, this time from this side of the Atlantic Ocean. It can be found in the "extracts from the Itineraries of Ezra Stiles"—Yale University Press, 1916—and is in the form of an entry in the Diary of the Reverend Ezra Stiles, D.D., LL.D., President of Yale College who died in 1795. The entry is dated "June 1764" and reads, maintaining all the vagaries of Dr. Stiles' spelling:

"About 1705 Mr. Taylor wrote a poetic accot. of the Gyant found

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then at Claveric below Albany—and says that about fourty years before—or perh. 1666—he heard a Story of an Ind. Giant of incredible Magnitude & disbelieved it till he saw the Teeth, which he weighed, one above Two pounds & another full *five pounds*. He was told by the Dutchmen that the Grave or Extent of the Skeleton was *Twenty-five paces*, & they dug up a Thig bone measuring seventeen feet long & a knee pan a foot Diam. The Ind. has often told the Dutch of this Giant who they said was as tall as the Pine Tress and died Two hundred & fourty years before.

"The Thigh Bone was found & took up June, 1705, so he died about 1465—A Tooth weighed four pound & three Quarters. Grandfather Taylor says: Two other Teeth after were took up and were Weighed by myself in my house in Westfield; one weighed five pound, it had three furrows on the Top & was as hard as a stone; the other Two & one ounce. These Bones the Indians about Fort Albany flocked to see, upbraided the Dutch of Incredulity for not believing them who told them that about 40 years before that Time they had an Indian as tall as the tall pine Trees, that would hunt Bears till they were treed & then take them with his hands, & wade into Water 12 or 14 foot deep & catch Sturgeons 3 or 4 or 5 at a Time & broil & eat them."

At another place Dr. Stiles quoted from an entry in Taylor's Diary, of 1705, regarding those teeth. It was said there that they "looked like dull Olivant (ivory)" and also that the Indians had always asserted that the giant was "peaceful and would not hurt the little Indians." The description of the teeth, incidentally, poor as it is, indicates that they came from one of the American mastodons.

The tendency to regard any large bones as giant's bones was widespread, as can be seen from these examples and there can be no doubt that the Biblical reference was responsible for that in Christian countries. But that it was not the Biblical reference alone is proved by the most classical story of them all, the Odyssey.

After succeeding in breaking away from the land of the Lotus Eaters—now identified as the island of Jerba in the Gulf of Gabes on the North African coast—Odysseus and his companions, sail for an unspecified but apparently short time:

"Unto the Land of the Kyklops, a race overbearing and lawless
Soon we arrived. Here, trusting the favour of powers immortal
None with his hands e'er planteth a plant or tills with the ploughshare
Yet untilled and unplanted, behold, all groweth in plenty
Wheat and barley and vine; and the vine's luxuriant clusters
Bear rich juice of the grape that the rain of the heaven does nourish.
Neither assemblies for council they have nor laws and traditions.
Dwelling apart on the crests of the highest mountains the Kyklops

Hollow caverns inhabit . . ."
(Odyssey, IX, 106-114.)

Then follows the well-known adventure, the son of Poseidon, mightiest of all the cyclopes—or, in Greek, kyklops. Odysseus and his men, looking around on the luxuriant isle, enter a large cave. There are signs of human activity, but nobody is in sight. But at dusk the kyklops appears, a gigantic figure with only one large round eye—"kyklops" also means "round-eyed" in Greek—in the middle of the forehead. I might mention here that Homer had his little joke with the names of his characters here as elsewhere in the Odyssey, "Polyphemus" means "the much talked-about," such stories must have been daily fare in the harbor taverns where sailors met and drank and talked.

Polyphemus eats two of the men and then settles down to sleep, closing the entrance with a boulder too large for human hands to move. The next morning he again eats two of the warriors and then leaves, closing the cave behind him, Odysseus and his men sit around gloomily, thinking of means to overpower the monster. At night Odysseus greets Polyphemus with Greek heavy wine and, being asked about his name in the ensuing conversation, tells Polyphemus that "Nobody called me my mother and nothing but Nobody call me all my companions"—an old ruse often found in ancient literature. When the giant is moaning in drunken sleep Odysseus and his men heat a pole in the fire and jab it into the single eye. The giant shouts for help, but when other kyklops, assembling outside the cave, hear him yell that "Nobody tries to kill me" they depart again, advising him to pray to his mighty and immortal father. Odysseus and his men escape with the flock of sheep the next morning.

Safely aboard his vessel Odysseus cannot resist to shout his real name to the blinded monster. Polyphemus tries to call him back, but Odysseus very wisely distrusts the pleasant promises and urges his companions to row harder.

"Thereat, with a heart more maddened to fury
Breaking a peak clean off from a huge high mountain he hurled it.
Down on the water it fell . . ."
(IX. 480/2)

Tradition almost as old as the Odyssey itself has it that the island of Polyphemus is Sicily and most commentators saw a perfect description of the giant in the lines IX, 190/3:

"Yea and a monstrous marvel was he—not fashioned in seeming
Like to a mortal that liveth on bread but the peak of a mountain
Covered with forests and standing alone, o'erstepping the others."

It was Vergil who spoke of *Aetnaeos Cyclopes,* indicating that he took the kyklops Polyphemus to be a personification of Mount Aetna in Sicily. Many of the other features agree well with this explanation. The large *round* eye might well be the creator, the roaring shouting of

the giant and the throwing of mountain peaks also speaks for a volcano. So do the caves and the fact that the kyklops "dwell apart on the crests of the mountains." Even the fertility of the soil, especially for grapes, goes well with volcanism. And in mythology the kyklops were the assistants of Hepaistos, the smith, who fashioned the thunderbolt's. Pliny the Elder followed that tradition in calling volcanic bombs *cyclopum scopuli.* All in all it is quite likely that Polyphemus is really Mount Aetna.

But all poetry consists of weaving various strands of ideas together and it is probable that Homer had another thing in mind too, that he referred to living giants—or what was taken to be living giants—along with the personification of the volcano. Even that thought has a long tradition and around the middle of the XIVth century Giovanni Boccaccio announced triumphantly that the remains of Polyphemus had been found in a cave near Trapani on Sicily. He did not forget to mention that this find vindicated Empedocle who, in 440 B.C., had claimed that Sicily had once been the dwelling place of ferocious giants. The bones found in the cave seemed to indicate, Boccaccio wrote, that those giants were close to three hundred feet tall, it must have been distinctly unpleasant to meet them.

Those bones were preserved for centuries and about three hundred years after Boccaccio's time they were still seen by the learned Jesuit Athanasius Kircher. Kircher described them as ponderous but added that Giovanni Boccaccio had exaggerated their size, the giants were not three hundred but only about thirty feet tall, still large enough to make them eat two normal humans for one meal.

Unfortunately these bones were not preserved and Kircher did not give a picture of them but a fancy restoration of Polyphemus. But we can be almost certain what they really were, bones and skulls of elephants are often found in Sicilian caves and we have seen what happened when elephant bones were found in Europe or in America.

There is another reason to be certain that they were elephant bones, the myth that the giants had only one large eye in the middle of the forehead. That is a feature which could *only* be caused by an elephant skull, as Professor O. Abel, who was then with the University of Vienna—and a colleague of Felix Ehrenhaft—pointed out in 1923.

Practically everybody nowadays would recognize an elephant's skull, even if the long tusks were missing. But if you imagine that you never saw an elephant or a picture of one —and the elephant was unknown to the Greeks of the Homeric Age —you'll notice that the skull of an elephant bears some resemblance to a human skull of exaggerated size, especially if the long tusks are missing.

This similarity becomes still greater if you look at it from the front. But in that position, in spite of increased resemblance, you'll also notice an important difference.

There are two large holes, evidently the eye sockets. But they are not separated, they have merged, showing only in outline that there were once two. And that single "socket" is in a position which can only be described in everyday language by saying that it is "in the middle of the forehead." Actually the "socket" is merely the nasal opening, while the real eye sockets are hidden if the skull is viewed from the front.

Even sailors of a hundred years ago, not to mention those of thirty-five centuries ago, would not have noticed such anatomical niceties. The big skulls to them were simply the skulls of big humans, distinguished from others not only by their size but also by the fact that they had "only one single eye in the middle of the forehead." And one can hardly expect these sailors to go home and report in a dry-as-dust manner that there was such a skull in such and such a cave. They would not tell of dried and dead skulls of giants, they would tell of giants that were very much alive and battled with them. And if they had not been victorious in those battles they would not sit in front of the harbor tavern to tell the tale. These tales must have been numerous—"polyphemus"!

There is not a single scientist who works along these lines and who did not accept Professor Abel's explanation of the giant of the Odyssey, just as the French Academy, over a century ago, accepted Cuvier's eloquent explanation of all the European "giants" dug up anywhere from Western France to the territory East of Vienna.

But in the early '30s a German professor, Dr. Edgar Dacque of Munich, who for many years had been Professor of Geology at the University of Munich and a respected authority in his field, suddenly turned mystic and wrote a book in which he tried to prove that all legends and myths have a foundation in fact, more, that they are direct descriptions of facts which look mythical to us because we are no longer acquainted with the facts.

More than ninety percent of the book was schizophrenic nonsense, but it did contain a few interesting ideas. As regards the giants Dacque accepted Abel's explanation of Polyphemus. He also accepted, of course, the other explanations of

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finds of large bones. He accepted the explanation that it was the Biblical passage which made people see giants where there was nothing more strange than extinct varieties of elephants. He granted the influence of the Odyssey. But he insisted that all of this was not the original legend or myth. Where did the ancient sailors get their conception of giants which was then transferred to the elephant skulls of Sicily. Where did the man, whoever he was, who wrote that Biblical passage, get his conception of giants.

Dacque insisted dogmatically that only a living animal, an active entity, can cause the forming of a myth. Later on, when the myth exists, anything may happen, but it needs the activeness of life to form. Having made this statement, Dacque naturally had to have an answer to the question: Well, how about it? What caused the original myth of the giants.

To answer that Dacque had to invent racial memory, or rather to revive this idea since it had been uttered before him. He pointed back into the geological past which he knew so well as a scientist. There had been the saurians of the type of brontosaurs and the other sauropods. There had been the biped carnivorous saurians, like Allosaurus. They had battled. And Man, in whatever evolutionary disguise he happened to be, had watched these battles. And had passed the memory on over millions and countless millions of years and finally, after words were invented, these old memories took shape in the stories of giants battling dragons.

There is so much that one can say against this idea that there is no use even in beginning. Dacque's so-called reasoning leaks from every joint of its system. It just doesn't work and any resemblance to actuality is purely coincidental. The only thing which can be kept in mind and should be tentatively investigated whenever an opportunity presents itself is the original idea: that an active living entity is more apt to form a myth than stones and bones.

The discoveries of Drs. Weidenreich and von Koenigswald have now supplied such a once-living "cause" for a myth, just as demanded by Dr. Dacque, even though it took a much more literal shape than anybody ever suspected. An encounter with men bigger and stronger than even big male gorillas must have caused an enormous psychological shock, even on brains which were generally somewhat dull and not too susceptible to such shocks. Of course there is no way of telling whether the myth of giants in the ancient Mediterranean culture and a similar myth in the Near East culture which ended up in the Bible was really caused by gigantic forms of early man. Unless we have a lot more fossil evidence than we have now, all these questions are open to conjecture.

But the main and established fact is that giants once existed.

THE END

Wanted: A Tube

(Continued from page 110)

poor seeing, since, as size increases, light from one side and light from the other are unequally bent by their differing paths through turbulent air. "Stopping down" by diaphragm would only coarsen the image, which is small in proportion as the aperture is large.

Even the best seeing is nowhere nearly perfect. At the best locations there is a constant movement of image most of the time. On the finest nights the images stand perfectly still for only one third or one half second at a time—occasionally. These instants of absolute tranquillity of the atmosphere permit the observer looking at Mars, for example, to glimpse the canals only momentarily—if he can see them at all. He studies the detail by intermittent glimpses and ignores the rest.

But taking a picture is continuous exposure. We have to take the offside moving image as well as the rare instants of quietude. That is why the double-slide plateholder has been useful. This is an arrangement not unlike the mechanical stage of a microscope. An observer may shift the plate a little in any direction during a long exposure to keep the guiding as precise as possible. A portion of the plate-carriage on each side is cut away, and eyepiece microscopes may be clamped on to the nearest convenient star in the field visible on either side; the operator keeps such a guide star quartered by spider-web crosshairs or "spider lines" throughout the exposure. Difference in angle of altitude causes a shift due to the refraction of light through our atmosphere which is thicker, of course, near the horizon. (We have all seen the oblate sun at evening.) A slight rotation of the field may occur which the double-slide plateholder may correct by also rotating slightly. A skilled operator may follow in some measure the oscillations of the guide star and he may make a small correction with each hand once a second or so and check for rotation of field at intervals. The telescope may cool off after a bit and shrink a little as its heat is radiated to the sky. The operator may find a check for focus in order occasionally.

As a result of atmospheric distortion, then, we should not be surprised to find that the big telescopes can rarely secure images less than ten times the diameter of the visual image at instants of good seeing. We might be fairly safe in assuming that the experts consider a photographic image ten times the area of the star image first-class work. Assuming that since ten diameters larger means one hundred times the area covered by the moving real star image, it took about one hundred times longer to induce the whole area to turn black than was necessary to darken one spot just the size of the image. The moving finger of light writes—but not clearly.

To try to demonstrate what takes place, a piece of black paper just a bit larger than this magazine was

pierced with various sizes of small holes with the point of a needle. It was illuminated from behind and photographed with an ordinary camera about eight feet distant. The area of the film was slightly larger than one square inch, about the useful size of field of a big reflector. (Yes, the plates themselves are quite small.) The picture shows each "star." The radial arm effect on the larger images is due to crossed lines drawn in ink on a disk of plexiglass placed before the lens to imitate the diffraction effect of light hitting the secondary mirror support arms of a reflector. The larger size of the bright images is due more to the scattering and irradiation of light in the film layer itself than to a true indication of the diameter of the hole. A film exposed merely out of focus showed the artificial stars as sharp round disks of various intensities; the faint "stars" were lost, but so was the general similarity to a real star photograph.

The last picture is the result of exposing a film under disturbed conditions, in an effort to approximate bad seeing. Nothing is crisp, and we have certainly lost a couple of star magnitudes. Notice how the band of stars has become a nebulous cloud. There was enough light, but it was not delivered with precision to single spots.

To sum up, we have seen that the telescope, after a century, is the most precise of all cameras. Indeed, the great mirrors are the most perfect artifacts of man, for, should we conceive a mirror enlarged to stretch from New York to Washington, no error of the curvature would deviate by so much as half an inch. We recall that these precisely balanced and compensated machines may be turned at the touch of a small child. Nevertheless, the image of a twinkling star does its eccentric pirouettes somewhat faster than we can follow it.

Could an automatic guiding system be devised? With the recent rise of television, electronic control occurred to several people. In the early thirties, schemes to shift the plateholder magnetically by photocell-trigger were published by amateurs, but these offered no check to blurring and degraded images. Henreauteau proposed televising directly at the focus of the telescope. Still, the best iconoscope seemed only about as sensitive as standard plates. Interestingly enough, the sensitivity of the film or plate had not been increased very much, because the faster emulsions so widely advertised are apparently due to selective dyes which now utilize the reds and yellows, energy which in former years was wasted. Sort of shedding new light on pretty much the same old coating.

Could we rig up a photocell so that a star's light would trip a shutter? So far cells have not been sensitive enough. But we might consider such an approach to the problem. The drawing illustrates such a scheme. It assumes a quite fabulous little tube about the size of a cigarette butt nestling up to the edge of a glass plate. A tiny

transparent cylinder cemented to the tube forms a platform at the exact level of the sensitive surface of the plate. The amount of light in the guide-star image might be of the order of ten thousand quanta per second. This, they tell us, should produce a current of some 10-15 amperes in a photoelectric cell, too small to catch with a galvanometer. Electrometers have measured currents of 10-18 in a reasonable length of time. We need a tube that will whoop up the 10-15 amperes to some nice fat milliamps—and this very quickly indeed.

Were such a tube available, in a stable amplifier hookup, we might block the focal image of the guide star's light with a tiny opaque disk. While the image hits the disk—no tube current and shutter open. Alignment is perfect and we are exposing. Skid a little off the disk, spill light into cell—*blip!* shutter closes, say in one two hundredth second. No exposure, no sky fog, nothing at all recorded until precise position again! Image stands still on disk for one fifth second and we expose for one fifth second very perfectly, minus shutter time lag, say one one hundredth second. Rotation of field check might be automatic if exposure required that one star on each side of field be correctly on occulting disks before exposure is permitted. Focal error would be indicated by total lack of opera-

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Statement of the Ownership, Management, etc., required by the Acts of Congress of August 24, 1912, and March 3, 1933, of Astounding Science-Fiction published monthly, at New York, N. Y., for October 1, 1945.

State of New York, County of New York (*ss.*)

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared H. W. Ralston, who, having been duly sworn according to law, deposes and says that he is Vice President of Street & Smith Publications, Inc., publishers of Astounding Science-Fiction, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to wit:

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Sworn to and subscribed before me this 28th day of September, 1945. Edward F. Kasmire, Notary Public No. 455, New York County. (My commission expires March 30, 1947.)

tion—errors in or out of focus would spill light past the disk, as would an "exploding" image. So, one might possibly build up a picture from thousands of intermittent snapshots, one one hundredth second to, say, one fifth or one fourth second in duration—but all in the same place. A small hole in place of a disk would reverse the cycle.

Sky fog? Looks like it would cease to be much of a consideration. Total exposure time might be extended twenty or more times. One might soak up light for weeks on the resolution of faint stars, providing a pair of bright stars are close enough to work the gadget.

Dr. Zworykin said in 1937 that at RCA laboratories they had made a small rotating shutter, spring loaded through a slipping clutch turned by a telechron motor that opened or closed by quarter revolutions in about one two hundredth second. He said that it worked fine and as continuously as needed. Something like this would be quite adequate. Kerr cells were considered, but they seem too inefficient. A shutter should lie close above the plate, should occult about one square inch, and permit a clear aperture when open.

The actual image is in reality often less regular and a bit larger than theory calls for, but its energy is concentrated at center even when it "sparkles" visually. One may occult artificial star images with a microscope and any lens that will give a hard round image, and the visual effect is very pretty. Droplets of mercury in balsam may be pressed by a cover-glass into minute disks on the glass slide and, with microscope horizontal, may be brought into coincidence with focal point of a lens.

Incidentally, this reveals the quality of the lens, since the maker usually tests his curvatures similarly, that is, by how well an artificial star—distant point source of light—is resolved into a diffraction image.

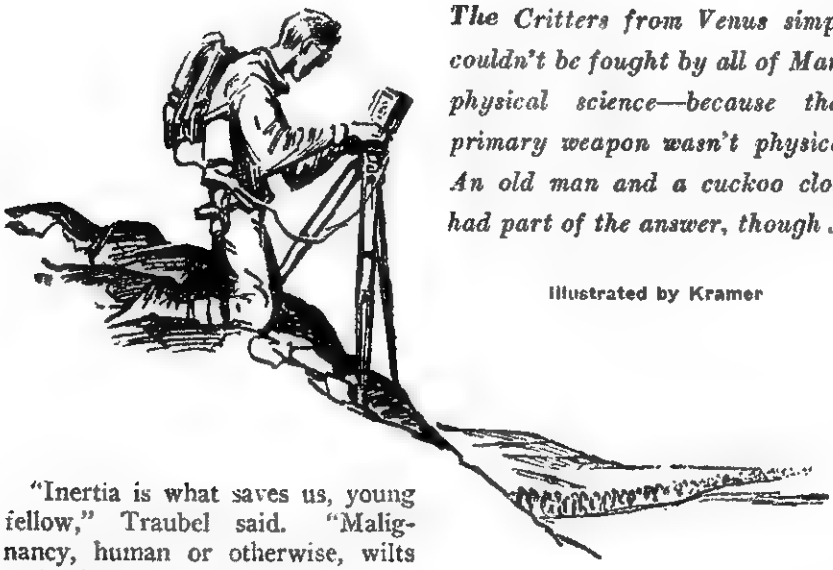
If it proved possible to actuate shutter before star images shift by half their diameter, we should expect plate images of enhanced central intensity due to overlapping, but not more than twice real image diameter—ignoring irradiation and reflection effects which are small for faint stars. Losses due to intermittent exposures? Well, in wandering over a hundred-to-one area we are certainly practicing intermittence for fair on each area. Holding to a four-to-one area might even cut our present losses!

Would such a device expand the universe a bit and resolve the stars of other galaxies? On paper it would certainly seem so. It might open a new window to the sky. The beauty of pictures secured might prove startling, even if the device succeeded in resolving photographically detail only twice as small as in previous pictures of a given area. And, since no single instrumental advance has even succeeded in taking a twice-as-good leap in astronomical photography, a gain of three or four times—well, sirs, that would be quite a thing!

THE END.

The Critters

by FRANK BELKNAP LONG



The Critters from Venus simply couldn't be fought by all of Man's physical science—because their primary weapon wasn't physical. An old man and a cuckoo clock had part of the answer, though . . .

Illustrated by Kramer

"Inertia is what saves us, young fellow," Traubel said. "Malignancy, human or otherwise, wilts under its own weight."

He was sitting on a jagged granite outcropping on the crest of his land, his sagging shoulders and straddle-legged posture giving him the aspect of a dejected steeplechase rider about to come a cropper. But suddenly as he spoke his shoulders straightened, and the rusty garden rake in his gnarled, blue-veined hands began to vibrate like a whip.

Morley watched a rapt possessiveness creep into the steel-gray eyes and found himself wondering how a man so gaunt and ill-colored could have turned the sloping mountainside into a garden plot so riotously ablaze with color that it dazzled his vision.

On the sloping acres below were russet patches, and emerald patches, and a solid acre of pumpkins gleaming in the sunlight opposite a field of waving corn.

And suddenly the old man was nodding, his eyes sweeping all of the wide green acres he'd refused to yield up to the alien hordes. His

acres were green because he'd gone right on ploughing and seeding and hoeing. Not all of Joel Traubel's neighbors had been as brave.

"Perhaps 'brave' isn't the right word," Morley thought aloud. "Perhaps 'foolhardy' would be a better word."

"Come again, young fellow?"

Morley took off the glasses he'd found by rummaging through the charred debris of an optical display case—he'd tried on sixty pairs—and his stare seemed to take on an added sharpness before he returned them to his nose.

He wasn't a "young fellow" but a lean, haggard-faced man of forty-two, with his years etched as indelibly into his face as the whorls on the shell of a mossback.

But then—Traubel was so old it was only natural he should think of a man with a pack on his back as a "young fellow." It wasn't difficult to compute the number of years Traubel had been on Earth. A man as virile as Traubel still was would naturally lie a little about his age.

He'd lop off a few years as a sop to his vanity and a few out of sheer cussedness, but the way the old man's memory kept harking back to the closing years of the twentieth century was a dead giveaway.

The winding procession of armed Venusians in the blue-lit defile far below would have checked the loquacity of an ordinary man in mid-stream. But Traubel just kept talking about his young manhood, and his mental processes were not those of a hunted man, but of an imaginative lad with a well-ordered, well-regulated life looming ahead of him through the hazy mountain vista up which he'd been climbing for forty years.

"Didn't catch what you said, young fellow. Funny thing, no one thought it would be like this when the first spaceship landed on Venus, and Fleming and Pregenzer were massacred. We just didn't realize we'd supplied the malignant critters with a blueprint. They couldn't build spaceships before they'd seen one, naturally. But when we plunked a ship down in the pea soup right before their nostril slits—"

"I wouldn't want the job," Morley said.

"Come again, young fellow?"

"Oh, I mean—the job of splitting the hair that separates an imitative from a constructive faculty."

Traubel nodded. "They built thousands of ships as alike as peas in a pod," he reminisced grimly. "And now there's a blight on the Earth and all the people have to look forward to is the time when they'll be buried together. If they're married, that is.

"Funny thing about that. The cities have been leveled and all the folks I see are just marking time. But it's the green fields turning black I feel the worst about. A city you can toss away without an awful lot of grief, but the earth of a man's own ploughing under his feet, the smell of fresh-turned earth when it's been raining up and down the mountainside—"

"So you've stayed on," Morley

said, jerking his bronze-haired head at the fertile acres beneath, "year after year, minding your own business, wresting a living from the land."

"That's right, young fellow. Up and down the Earth you young fellows go with your bellies pulled in, hiding in caves from dawn to dusk, picking up scraps of food like turkey buzzards."

The old man bent and scooped up a handful of dirt. "Scavenger beetles," he amended, his nostrils wrinkling as he picked out a fat white grub, and crushed it between his thumb and forefinger. "No offense, son, but that's what you are. There are a few cracked mirrors left. Did you ever try standing off and taking a long, sober look at yourself? I'll wager those black leather boots you're wearing came from—"

Traubel checked himself. "Oh, well, where they came from is no business of mine. But *I* wouldn't want to die with a dead man's boots on, son."

"I *have* died," Morley said. "I died yesterday, today and tomorrow I'll die again. A man is dead when he's caught like a fly in a web, and he's dead—and he dies. They kill swiftly, erratically, for no reason at all. They kill for the sheer pleasure of killing. It's like . . . well, you see a grub . . . no, a mosquito . . . and s u d d e n l y, there's a little red smudge on your thumb You don't hate the mosquito—"

"No, they don't hate us," the old man agreed. "That's what I've been trying to make you see. You wouldn't go out of your way to kill a mosquito. You or I wouldn't, and they're no different from us in that respect. My land's so high up on the mountain they just don't bother to turn aside and bother me."

"Not in forty years, old man?"

"Not more than four times in forty years," Traubel said. "And each time I made myself scarce. Just hiding in a cave for one day, even if it means crouching over a decaying carcass, doesn't harm a man when he knows he'll have his own land to come back to."

Traubel laughed harshly. "They set my fields ablaze, but a burning harvest now and then sweetens the labors of a man. You plough and you sow again, bringing a greenness out of the ash layer."

"It's like living on the edge of a volcano," Morley said.

"The law of averages is on my side," Traubel reminded him. "Four times in forty years is a pretty good batting average, as we used to say when we could move about freely enough to play games. Baseball—"

"You can flip a coin, and it comes heads fifty times," Morley reminded him. "Perhaps you've just been trading on your luck."

"Maybe so, young fellow, maybe so. But I just can't picture myself inviting a gift horse to kick me in the face."

Three thousand feet below red sunlight glinted on the hooked beaks of marching Venusians, glinted on

their scaly bodies and tentacled limbs.

"And in the background of a man's mind there is always a vision of the little towns, driving him on, giving him the will to remain a man—"

"There are no more litle towns," Morley reminded him.

"There *were* little towns," the old man said, raising his rake, and scraping rust from one of the prongs. "And I wouldn't want the job of splitting the hair that separates here and now from something I can still see and smell and touch just by stretching out a hand."

He nodded. The steely hardness had gone out of his eyes. His eyes looked now like a kid's on Christmas morning, sliding down the banisters with his head aureoled in a golden haze.

"A rake resting against a barn door, pigs—if you like pigs—all splashed with mud down one side, and pumpkins and woodsmoke in October. Even the swill trough smells sweet, and you and the missus, you put on your Sunday best and go chugging into town in a converted jeep roadster, and the missus says . . . shucks, it's all so close in my mind I just have to stretch out a hand.

"Come tomorrow, the missus will have been gone exactly fourteen years," he added, thoughtfully.

"I don't know whether I've been standing here a long time or a short time talking like an idiot," Morley heard himself saying. "Tell me, did you feel the same way when you and your wife were facing this together? Did you feel like a man who has gone out with his last penny and doesn't know whether to gamble it or not?"

Traubel turned and looked at him sharply. "You're not alone, young fellow? You weren't just passing by—alone?"

"No." Morley shook his head. "We . . . we passed your hut-home on the way up. We thought you mightn't mind if we put up with you for—" He hesitated. "I guess you'd call it a spell."

"Home burned down with the wheat," Traubel said, raking some dry leaves toward the outcropping. "Four times right down to the soil. The big trees had to be felled, and dragged up from the valley. My path almost crossed theirs."

He raked through the leaves, and uncovered a chestnut bur.

"If you saw a mosquito groaning beneath a log, would you crush it? They saw me, all right, following a winding trail up through the timberline. But shucks, crushing a mosquito carrying a log would take a kind of special double effort. Inertia—"

He wouldn't have thought of mosquitoes if I hadn't put the idea into his head, Morley thought. Aloud he said: "Is it all right, then—if we stay on for a spell? You know that queer old notion about a house? A house isn't a home until it's really been lived in. You give something to the house and the house gives something back to you. It's a sort of partnership, if you know what I mean—a symbiosis."

Traubel said: "Young man, I don't quite see—"

"She's going to have a baby," Morley said.

Traubel was silent for a full minute. Then he said: "Oh!" Then, after a pause: "Hut's above the timberline, high enough up to be as safe as the rock we're sitting on. You'd better get back to her, son."

Morley reached out and gripped the old man's arm, a curious wetness glistening on his cheekbones.

"Thanks," he said.

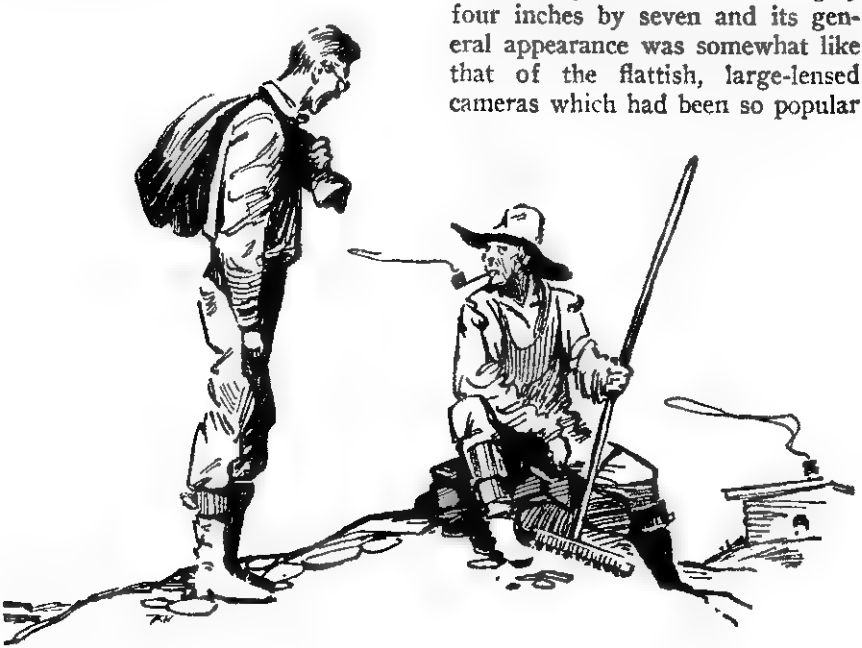
"Don't mention it, son. If you don't mind I'll just sit here a moment longer where I can see all of my land spread out beneath me like a chessboard. Sort of makes me feel good to know I can still move the pieces around. That wheat field down below reminds me of a queen with cornsilk hair arguing with a bishop decked out in cabbage leaves.

"You've played chess, son? The hut's my castle. You set out a lot of pawns to protect your rook or castle, and—"

Morley left him nodding in the gathering dusk, and went on down the mountainside, his trouser legs sticking out from the back of his boots.

Halfway down the mountain—exactly halfway as Morley's accurate eye measured the distance—he halted in his stride and his hand went under his coat to emerge with a small, flat object that caught and held the sunlight.

The object measured roughly four inches by seven and its general appearance was somewhat like that of the flattish, large-lensed cameras which had been so popular



in the middle years of the twentieth century.

In all of the crumbling yellow optical catalogues which Morley had thumbed through such immense, metal-embedded "eyes" were euphuistically listed as—"c a n d i d cameras!"

Did that mean that they caught men and women in their unguarded moments, and presented a more accurate picture of humanity's frailities than the more primitive visual recording instruments of an earlier period?

With fingers that trembled a little he loosened his shoulder pack, and a small metal tripod fell to the ground. He screwed the cameralike object on the tripod with a grim urgency in his stare.

Almost he wished that the object *were* a camera.

Perhaps his belief in himself was no more than a fantastic nightmare which had mushroomed in his brain.

No—he really didn't believe that. He had a natural bent for *improving* things, and the cameralike object had taken shape so inevitably that he could not doubt his ability to bring the invention to full fruition in another two years. Two years? God, he'd settle for seven months —six—

Morley wiped the sweat from his face. His hands were trembling so that they seemed all thumbs. He had all the needed, delicate parts now, but freedom from fear, freedom from strain, the opportunity to work unmolested in a small, hastily improvised laboratory might well spell the difference between success and failure.

A mountain laboratory? Well, he'd know in a moment whether he could achieve effective results by training the instrument straight down the mountain at a *marching* column.

Oh, it wasn't a vain hope, for he was the only man left on Earth with a surgical technique worth developing.

There was a brackish taste in Morley's mouth.. Deep therapy was what it amounted to, but, if it couldn't be adapted to the peculiar structure of Venusian brains, humanity would do better to stick to hand-blasters. What he desperately needed now was more time—time to work on the skillful interlocking of high-frequency wave transmission with the destructive intracranial vibrations set up by the controlled use of subsonics.

In the last years of the twentieth century beam surgery could make babbling infants of men, but not even a cyclotron beam of alpha particles could destroy the brains of Venusians. Convulsive idiocy in humans, yes. The forebrain and cortex destroyed, nothing left but the thalamus—all in the last six years of the twentieth century!

Morley had watched a few experiments go wrong. Himself a fifteen-year-old kid, his uncle a surgeon, and letting the beam get out of control because with all the great accumulation of knowledge and experience at his disposal that grand old man couldn't control the trembling of his hands.

Well, he, Morley, could control

the trembling but—the transmitter just wasn't powerful enough. When he trained it on the Venusians there was a brief pause like the petit mal of human epilepsy. For the barest fraction of a second the beam worked, but—

For an instant there stirred within Morley a foreboding born of years of acute fear and blind sensation. Then—he heard something click beneath his fingers.

Instantly he slammed the dread in his mind back against a mental wall—held it there.

Two thousand feet below a moving shadow stopped. The sunlight seemed to deepen, and monstrously between walls of blueness there spread the penumbra of a beast with many beaked heads that *had ceased utterly to weave about.*

A dislodged stone rasped against Morley's heel and went bounding down the slope like a startled hare.

Bounding, zigzagging—

If a man didn't smoke, it could be because—he had no matches. If a man didn't breathe, it could be because the air about him had become thick, viscid.

Ten minutes later Morley was standing very still, a thin trickle of blood running down his chin.

Ten full minutes, he thought wildly. The whole blasted column went mindless. It halted and then—moved on *without remembering.* I've got them, I've got them—in the palm of my hand! Give me seven months—a mountain laboratory—I'll settle for four!

"He asked me if I played chess," Morley said, when he'd scrubbed the dirt from his hands and dried them with a towel.

The woman on the bunk raised her face and stared at her husband across the rafter-hung hut, the hair above her brow a tumbled mass of gold.

For an instant she seemed almost pretty, despite her wind-coarsened skin and the harsh lines which hunger and deprivation had etched into her flesh.

"Do you really think he's just been lucky, Jim. Or is it something we"—she hesitated, as though visualizing the begrimed, misery-laden millions who trudged the waste places of the Earth—"is it some hidden power he has which we could use too, if he'd tell us about it?"

Morley sat down on the edge of his bunk, and leaned forward, hands on knees. "I don't know," he said. "It may be he's been caught up in what used to be called an infinity cycle of lucky runs."

"An infinity cycle?"

Morley nodded. "I told him a flipped coin can fall the same way fifty times in succession. But that's not remarkable. It happens so often it doesn't even do violence to the law of averages. What I didn't tell him—perhaps I didn't need to—was that a flipped coin can come heads fifty million times. In a cycle of luck which begins and ends in infinity—"

Morley rose and adjusted the wick on a grimy oil lamp, his hands trembling.

"The opponents of extrasensory perception used to claim that we're all at the receiving end of dozens of such cycles, where all the lucky runs just happen to come together in the little segment of space-time we've been caught out in. For all we know Traubel may be at the receiving end of a cycle that has 'luck-with-Venusians' stamped all over it."

Arline Morley half-rose, her eyes bright with a dawning hope. "Then if that's true, Jim, he'll be *safe* here. Your son and mine!—safe in a green mountain land that's protected by something no power on Earth can break!"

Morley's face was grim. "No, I . . . I don't think so. The introduction of an extraneous factor would invalidate the probability factor. Just our being here would . . . well, we've jarred the hand that does the flipping. Our presence here may bring down the thunder!"

"But that's just a thtory, isn't it? It can't be proved."

Morley said, "Just a wild guess, of course. I didn't mean to sound so dogmatic. There's probably no such thing as an infinity cycle of lucky runs anyway. Traubel claims it's just inertia which keeps the critters—he calls them critters—from climbing the mountain and laying waste to his land. Just inertia."

"Maybe he's right," Arline said. "Remember how the others were all cut down? Then remember how it stopped, an instant before it reached us, and—went off down the road."

White-lipped, Morley nodded.

"The road was a shambles. We had to stumble over their bodies to get to the cave, the bodies of men and women cut in two by—"

"Stop that!" Morley's palms were sweating. "Stop it, you hear?"

"Twisted, crushed," Arline said tonelessly. "Limbs torn off—"

She began to sway from side to side, her nostrils quivering. "Our son will never know a safer world. We won't be his real parents. He'll be cradled in the lap of terror and when he cries— Death will suckle him. If he doesn't cry, if he's born dry-eyed, so much the worse for him. Tears are a coward's refuge, but we have to be cowards or—go mad. He'll curse the day he was born!"

Morley started to move toward her across the hut.

Before he'd advanced a foot his scalp began to tingle, and he felt a coldness start up his spine.

For an instant he stood utterly motionless, staring at his wife. Then terror began to tug at his wrists, tug at his mouth. For perhaps a full minute it was an ambiguous sort of terror. He thought at first his wife's features were distorted because his own were.

He'd lost control over his features, especially his lips. He couldn't stop the twitching of his lips. But mercifully for a moment he was permitted to believe that the terror which he felt had simply communicated itself to his wife.

Then he saw that it was much more than that. She was feeling it, too. Her palms were pressed to her temples and she was staring past him at the slowly opening door of the hut.

The pattern never varied. It was always the same—a coldness, a fullness, a tightness, holding the muscles rigid, paralyzing the will to resist.

The nearness of a Venusian did something to the human brain that could not be explained by any of the known laws of nature. There were unknown laws, patterns dimly suspected to exist and laws which had almost been grasped and dragged out into the light.

But compared to that power, whatever it was, telepathy was like a tiny wax candle sputtering in the glow of a billion candle power light.

It was a power which could flatten a human body in a split second of time, flatten it as though by a blow from a gigantic mace. It was a power which no ordinary human weapon could withstand, or ever hope to withstand. It could twist, maim, tear, rend, crush. It could move slantwise like a buzzsaw across a column of men; it could rip holes in the earth, it could pile up the dead in stiffening rows like cordwood—

Morley tried vainly to moisten his lips. The patient, his mind seemed to be saying, should be kept in a dark room and nutritent enemata administered. That, according to an old medical book he'd read once, was the prescribed treatment for—rabies. Never a recorded cure, in all the history of rabies, but the patient had to be fed, the agony had to be prolonged, in order to exhaust all the nonexistent possibilities of a cure.

The compact little energy weapon in Morley's clasp had never destroyed a Venusian. It never could destroy a Venusian. It was as useless as a "cure" for rabies.

But instinctively his hand had traveled under his begrimed oversuit, grasped the weapon, and drawn it forth. He knew he'd be caught up, mauled twisted before he could blast. And if he were caught up with his work uncompleted, there could be no cure for a disease which had blotted out the sunlight for the entire human race. No cure—no cure—worse than rabies. *Slam.* An opening door closes, a leaf is torn from a book and perhaps there is a breathtaking instant when a man does what he can—

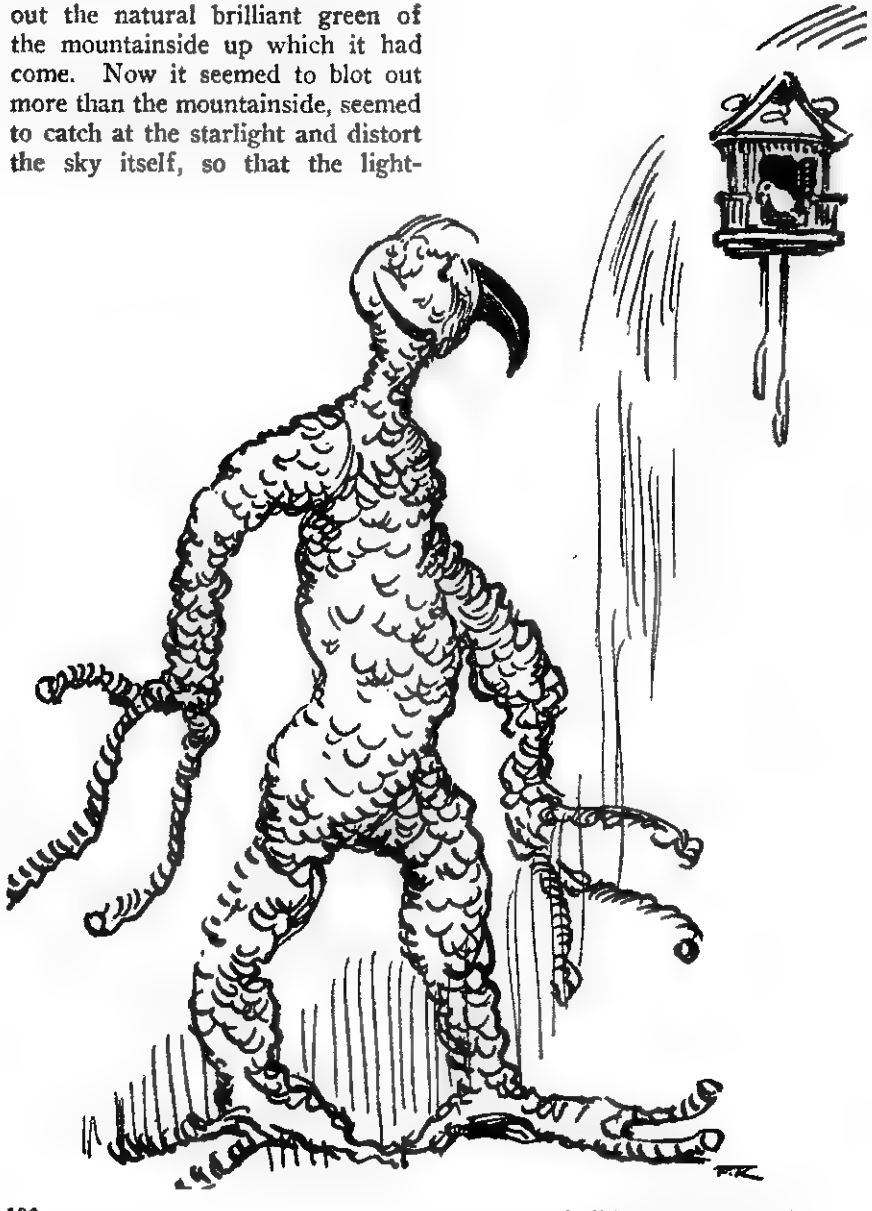
Good-by, he thought. Good-by darling, good-by James Morley, Jr. Why did a man instinctively assume that his first-born would be a boy?

Morley suddenly saw that the door had swung so wide there was no longer a barrier between his straining eyes, and the night without.

The form looming in the doorway conveyed an illusion of having laboriously impressed itself upon the sky. It was faintly rimmed with light, and the stars which glimmered on both sides of it seemed to be rushing together, as though its bulk had torn a rent in

the warp-and-woof stuff of the physical universe.

Even in broad daylight the bulk of the Venusian would have blotted out the natural brilliant green of the mountainside up which it had come. Now it seemed to blot out more than the mountainside, seemed to catch at the starlight and distort the sky itself, so that the light-



threaded firmament above and behind it reminded Morley of a collapsing shroud.

There was an awful instant when time seemed to miss a beat. Morley felt his fingers tighten on the blaster, felt his scalp tighten all over his head.

Then, as in a dream from which he had been rudely awakened by something to which he could not give a name he heard a ghostly faint fluttering behind him, and a voice said: "Cuckoo! Cuckoo! Cuckoo! Cuckoo! Cuckoo! Cuckoo!"

Slowly Morley turned his head. As he did so the fluttering was resumed, and the door of the clock banged shut on a feathered mite!

Morley had noticed the clock hanging on the wall, but now he seemed to be staring at it through the wide, stationary eyes of a madman. A magical clock! Morley had heard of such things, gadgets which dated back to the middle years of the nineteenth century.

He had noticed this one in particular because weighted bellows under glass had always held a peculiar fascination for him. By the push of a wire given to the body of a bird it could be bent forward, the wings and tail raised, the beak opened.

The bulkiness in the doorway must have shared Morley's interest in the clock, for it crossed the hut so rapidly that a light-rimmed afterimage appeared to hover in its wake.

There was a moment of silence while it stared at the clock, all of its malignancy humped together in a towering, overwhelming wave that could be felt in every part of the room.

Then, slowly, methodically, the Venusian began to dismantle the clock.

There was a metallic clatter, a ripping sound, and something that looked like the intestines of a robot gleamed for an instant between its scaly hands. Then the door behind which the cuckoo had taken refuge was torn from its hinges, and the pathetic mite was lifted out on a dangling filament, its neck distended, its white breast feathers flecked with grease.

The Venusian departed without uttering a sound. It simply swung about, recrossed the room, and went clumping out into the night, half the clock dangling from the amorphous limblike structure which jutted from its breast.

After what seemed like an eternity the back door of the hut opened a crack and a familiar voice said: "I forgot to tell you, son, that I have a few solitary visitors. Now and again one of the critters will leave the line of march and come clumping up the mountainside. If you saw a mosquito across the room, and your thumb began to itch you'd cross the room on a sudden impulse, maybe, and smash it."

The door opened wider, and a rusty garden rake clattered against the jamb.

"But you wouldn't have to cross the room, son. You'd almost as soon as not, and if when you're raising your thumb a hand reaches out from the wall and says: 'Clasp me,' or

the wallpaper turns from green to pink your interest shifts and there's time for inertia to set in. You become interested in the wallpaper, and the mosquito just doesn't get crushed."

The rake made a rasping sound on the floor. "Pawns. That clock was a pawn, and I've set other pawns out on the mountainside to protect my rook just in case one of the critters turns aside and starts up. I've been playing a game with them for more than thirty years now, son. It isn't often one of them gets as far as the hut."

A low chuckle came from the doorway. "Interested? You bet it was interested. A cuckoo clock is about the rarest mechanical gadget on Earth. Not many of 'em left, not one Venusian in fifty thousand has seen one—no, make that fifty million. And they do like to imitate things; they like to pull gadgets apart. There's just that little interval between impulse and inertia which has to be bridged."

"Good Lord!" Morley choked.

"It came in through the front door, didn't it? You came in through this door, I guess, or you'd have heard the birdie too. 'Cuckoo, cuckoo'—because just coming in through the front door activates the clock. You see, son, there's a photoelectric beam in the front door, and the poisonous critter brought the birdie out the instant it stepped into my parlor."

Morley wiped the sweat from his face. *He had all the needed, delicate parts, and freedom from fear, freedom from strain, the opportunity to work unmolested in a small, hastily improvised laboratory might well spell the difference between success and failure.*

Might? Would. And he wouldn't have to settle for four months now. He'd have all the time he needed to perfect the instrument.

The door made a rasping sound as it was thrown wide.

Traubel stumbled a little as he crossed the hut. He crossed to the washstand, poured out some water and started fumbling around for a cake of soap on the cluttered shelf where he kept his shaving kit, a few necessary drugs, and a dog-eared calendar dating back to the late years of the twentieth century.

"I'm glad you and the missus are going to stay for a spell, son," he said. "You've no idea how lonely it gets up here when the crickets stop chirping, and the nights start getting longer. You see, son, I've been stone blind now going on eighteen years."

THE END.

The Mule

(Continued from page 53)

"Even better than that, Indbur?"

"Judge for yourself. Two days ago, the so-called Association of Independent Traders declared war on the Mule, and the Foundation fleet is strengthened, at a stroke, by a thousand ships. You see, this Mule goes too far. He finds us divided and quarreling among ourselves and under the pressure of his attack we unite and grow strong. He *must* lose. It is inevitable—as always."

Mis still exuded skepticism, "Then you tell me that Seldon planned even for the fortuitous occurrence of a mutant."

"A mutant! I can't tell him from a human, nor could you but for the ravings of a rebel captain, some outland youngsters, and an addled juggler and clown. You forget the most conclusive evidence of all—your own."

"My own?" For just a moment, Mis was startled.

"Your own," sneered the mayor. "The Time Vault opens in nine weeks. What of that? It opens for a crisis. If this attack of the Mule is *not* the crisis, where is the 'real' one, the one the Vault is opening for? Answer me, you lardish ball."

The psychologist shrugged, "All right. If it keeps you happy. Do me a favor, though. Just in case . . . just in *case* old Seldon makes his speech and it *does* go sour, suppose you let me attend the Grand Opening."

"All right. Get out of here. And stay out of my sight for nine weeks."

"With unprintable pleasure, you wizened horror," muttered Mis to himself as he left.

VIII.

There was an atmosphere about the Time Vault that just missed definition in several directions at once. It was not one of decay, for it was well-lit and well-conditioned, with the color-scheme of the walls lively, and the rows of fixed chairs comfortable and apparently designed for eternal use. It was not even ancient, for three centuries had left no obvious mark. There was certainly no effort at the creation of awe or reverence, for the appointments were simple and everyday—next door to bareness in fact.

Yet after all the negatives were added and the sum disposed of, something was left—and that something centered about the glass cubicle that dominated half the room with its clear emptiness. Four times in three centuries, the living simulacrum of Hari Seldon himself had sat there and spoken. Twice he had spoken to no audience.

Through three centuries and nine generations, the old man, who had seen the great days of universal empire, projected himself—and still he understood more of the Galaxy of his great-ultra-great-grandchildren, than did those grandchildren themselves.

Patiently that empty cubicle waited.

The first to arrive was Mayor Indbur III, driving his ceremonial ground car through the hushed and anxious streets. Arriving with him was his own chair, higher than those that belonged there, and wider. It was placed before all the others, and Indbur dominated all but the empty glassiness before him.

The solemn official at his left bowed a reverent head. "Excellence, arrangements are completed for the widest possible sub-etheric spread for the official announcement by your excellence tonight."

"Good. Meanwhile, special interplanetary programs concerning the Time Vault are to continue. There will, of course, be no predictions or speculations of any sort on the subject. Does popular reaction continue satisfactory?"

"Excellence, very much so. The vicious rumors prevailing of late have decreased further. Confidence is wide-spread."

"Good!" he gestured the man away and adjusted his elaborate neckpiece to a nicety.

It was twenty minutes of noon!

A select group of the great props of the mayoralty—the leaders of the great Trading organizations—appeared in ones and twos with the degree of pomp appropriate to their financial status and place in mayorial favor. Each presented himself to the mayor, preceived a gracious word or two, took an assigned seat.

Somewhere, incongruous among the stilted ceremony of all this, Randu of Haven made his appearance and wormed his way unannounced to the mayor's seat.

"Excellence!" he muttered, and bowed.

Indbur frowned, "You have not been granted an audience."

"Excellence, I have requested one for a week."

"I regret that the matters of State involved in the appearance of Seldon have—"

"Excellence, I regret them, too, but I must ask you to rescind your order that the ships of the Independent Traders be distributed among the fleets of the Foundation."

Indbur had flushed red at the interruption. "This is not the time for discussion."

"Excellence, it is the only time," Randu whispered urgently. "As representative of the Independent Trading Worlds, I tell you such a move cannot be obeyed. It must be rescinded before Seldon solves our problem for us. Once the emergency is passed, it will be too late to conciliate and our alliance will melt away."

Indbur stared at Randu coldly, "You realize that I am head of the Foundation armed forces? Have I the right to determine military policy or have I not?"

"Excellence, you have, but some things are inexpedient."

"I recognize no inexpediency. It is dangerous to allow your people separate fleets in this emergency. Divided action plays into the hands of the enemy. We must unite, ambassador, militarily as well as politically."

Randu felt his throat muscles tighten. He omitted the courtesy of the opening title, "You feel safe now that Seldon will speak, and you move against us. A month ago, you were soft and yielding, when our ships defeated the Mule at Terel. I might remind you, sir, that it is the Foundation fleet that has been defeated in open battle five times, and that the ships of the Independent Trading Worlds have won your victories for you."

Indbur frowned dangerously, "You are no longer welcome upon Terminus, ambassador. Your return will be requested this evening. Furthermore, your connection with subversive democratic forces on Terminus will be—and have been—investigated."

Randu replied, "When I leave, our ships will go with me. I know nothing of your democrats. I know only that your Foundation's ships have surrendered to the Mule by the treason of their high officers, not their sailors, democratic or otherwise. I tell you that twenty ships of the Foundation surrendered at Horleggor at the orders of their rear admiral, when they were unharmed and unbeaten. The rear admiral was your own close associate—he presided at the trial of my nephew when he first arrived from Kalgan. It is not the only case we know of and our ships and men will not be risked under potential traitors."

Indbur said, "You will be placed under guard upon leaving here."

Randu walked away under the silent stares of the contemptuous coterie of the rulers of Terminus.

It was ten minutes of twelve!

Bayta and Toran had already arrived. They rose in their back seats and beckoned to Randu as he passed.

Randu smiled gently, "You are here after all. How did you work it?"

"Magnifico was our politician," grinned Toran. "Indbur insists upon his Sono-Visor composition based on the Time Vault, with himself, no doubt, as hero. Magnifico refused to attend without us, and there was no arguing him out of it. Ebling Mis is with us, or was, He's wandering about somewhere." Then, with a sudden access of anxious gravity, "Why, what's wrong, uncle? You don't look well."

Randu nodded, "I suppose not. We're in for bad times, Toran. When the Mule is disposed of, our turn will come, I'm afraid."

A straight solemn figure in white approached, and greeted them with a stiff bow.

Bayta's dark eyes smiled, as she

held out her hand, "Captain Pritcher! Are you on space duty then?"

The captain took the hand and bowed lower, "Nothing like it. Dr. Mis, I understand, has been instrumental in bringing me here, but it's only temporary. Back to home guard tomorrow. What time is it?"

It was three minutes of twelve!

Magnifico was the picture of misery and heartsick depression. His body curled up, in his eternal effort at self-effacement. His long nose was pinched at the nostrils and his large, down-slanted eyes darted uneasily about.

He clutched at Bayta's hand, and when she bent down, he whispered, "Do you suppose, my lady, that all these great ones were in the audience, perhaps, when I . . . when I played the Sono-Visor?"

"Everyone, I'm sure," Bayta assured him, and shook him gently. "And I'm sure they all think you're the most wonderful player in the Galaxy and that your concert was the greatest ever seen, so you just straighten yourself and sit correctly. We must have dignity."

He smiled feebly at her mock-frown and unfolded his long-boned limbs slowly.

It was noon—

—and the glass cubicle was no longer empty.

It was doubtful that anyone had witnessed the appearance. It was a clean break; one moment not there and the next moment there.

In the cubicle was a figure in a wheelchair, old and shrunken, from whose wrinkled face bright eyes shone, and whose voice, as it turned out, was the livest thing about him. A book lay face downward in his lap, and the voice came softly.

"I am Hari Seldon!"

He spoke through a silence, thunderous in its intensity.

"I am Hari Seldon! I do not know if anyone is here at all by mere sense-perception, but that is unimportant. I have few fears as yet of a breakdown in the Plan. For the first three centuries the percentage probability of nondeviation is nine-four point two."

He paused to smile, and then said genially, "By the way, if any of you are standing, you may sit. If any would like to smoke, please do. I am not here in the flesh. I require no ceremony.

"Let us take up the problem of the moment, then. For the first time, the Foundation has been faced, or perhaps, is in the last stages of facing, civil war. Till now, the attacks from without have been adequately beaten off, and inevitably so, according to the strict laws of psychohistory. The attack at present is that of a too-undisciplined outer group of the Foundation against the too-authoritarian central government. The procedure was necessary, the result obvious."

The dignity of the high-born audience was beginning to break. Indbur was half out of his chair.

Bayta leaned forward with troubled eyes. What was the great Seldon talking about? She had missed a few of the words—

"—that the compromise worked

out is necessary in two respects. The revolt of the Independent Traders introduces an element of new uncertainty in a government perhaps grown over-confident. The element of striving is restored. Although beaten, a healthy increase of democracy—"

There were raised voices now. Whispers had ascended the scale of loudness, and the edge of panic was in them.

Bayta said in Toran's ear, "Why doesn't he talk about the Mule? The Traders never revolted."

Toran shrugged his shoulders.

The seated figure spoke cheerfully across and through the increasing disorganization:

"—a new and firmer coalition government was the necessary and beneficial outcome of the logical civil war forced upon the Foundation. And now only the remnants of the old Empire stand in the way of further expansion, and in them, for the next few years, at any rate, is no problem. Of course, I cannot reveal the nature of the next prob—"

In the complete uproar, Seldon's lips moved soundlessly.

Ebling Mis was next to Randu, face ruddy. He was shouting, "Seldon is off his rocker. He's got the wrong crisis. Were your Traders ever planning civil war?"

Randu said thinly, "We planned one, yes. We called it off in the face of the Mule."

"Then the Mule is an added feature, unprepared for in Seldon's psychohistory. Now what's happened?"

In the sudden, frozen silence, Bayta found the cubicle once again empty. The atomic glow of the walls was dead, the soft current of conditioned air absent.

Somewhere the sound of a shrill siren was rising and falling in the scale, and Randu formed the words with his lips, "Space raid!"

And Ebling Mis held his wrist watch to his ears and shouted suddenly, "Stopped, by the Ga-LAX-y! Is there a watch in the room that is going?" His voice was a roar.

Twenty wrists went to twenty ears. And in far less than twenty seconds, it was quite certain that none were.

"Then," said Mis, with a grim and horrible finality, "something has

Know This Emblem!

Honorable Discharge

Army

Navy

Marines

Coast Guard

stopped all atomic power in the Time Vault—and the Mule is attacking."

Indbur's wail rose high above the noise, "Take your seats! The Mule is fifty parsecs distant."

"He was," shouted back Mis, "a week ago. Right now, Terminus is being bombarded."

Bayta felt a deep depression settle softly upon her. She felt its folds tighten close and thick, until her breath forced its way only with pain past her tightened throat.

The outer noise of a gathering crowd was evident. The doors were thrown open and a harried figure entered, and spoke rapidly to Indbur, who had rushed to him.

"Excellence," he whispered, "not a vehicle is running in the city, not a communication line to the outside is open. The Tenth Fleet is reported defeated and the Mule's ships are outside the atmosphere. The general staff—"

Indbur crumpled, and was a collapsed figure of impotence upon the floor. In all that hall, not a voice was raised now. Even the growing crowd without was fearful, but silent, and the horror of cold panic hovered dangerously.

Indbur was raised. Wine was held to his lips. His lips moved before his eyes opened, and the word they formed was, "Surrender!"

Bayta found herself near to crying—not for sorrow or humiliation, but simply and plainly out of a vast frightened despair. Ebling Mis plucked at her sleeve, "Come, young lady—"

She was pulled out of her chair, bodily.

"We're leaving," he said, "and take your musician with you." The plump scientist's lips were trembling and colorless.

"Magnifico," said Bayta, faintly. The clown shrank in horror. His eyes were glassy.

"The Mule," he shrieked. "The Mule is coming for me."

He thrashed wildly at her touch. Toran leaned over and brought his fist up sharply. Magnifico slumped into unconsciousness and Toran carried him out potato-sack fashion.

The next day, the ugly, battle-black ships of the Mule poured down upon the landing fields of the planet Terminus. The attacking general sped down the empty main street of Terminus City in a foreign-made ground car that ran where a whole city of atomic cars still stood useless.

The proclamation of occupation was made twenty-four hours to the minute after Seldon had appeared before the former mighty of the Foundation.

Of all the Foundation planets, only the Independent Traders still stood, and against them, the power of the Mule—conqueror of the Foundation—now turned itself.

TO BE CONCLUDED.

***Hellion Murdoch** left a treasure. Then Don Channing invented a matter-duplicator that made anything worthless. And for centuries, Murdoch's treasure was sought, till finally a man stumbled on the secret—but, though he knew how to find it, he didn't know what possible treasure could have value in the world of the duplicator!*

Identity

by
GEORGE
O.
SMITH

Illustrated by Williams

CAL BLAIR paused at the threshold of the Solarian Medical Association and held the door while four people came out. He entered, and gave his name to the girl at the reception desk, and then though he had the run of the place on a visitor basis, Cal waited until the girl nodded that he should go on into the laboratories.

His nose wrinkled with the smell of neoform, and shuddered at the white plastic walls. He came to the proper door and entered without knocking. He stood in the center of the room as far from the shelves of dangerous-looking bottles on one wall as he could get—without getting too close to the preserved specimens of human viscera on the other wall.

The cabinet with its glint of chrome-iridium surgical tools seemed to be like a monster, loaded to the vanishing point with glittering teeth. In here, the odor of neoform was slightly tainted with a gentle aroma of perfume.

Cal looked around at the empty room and then opened the tiny door at one side. He had to pass between a portable radiology machine and a

case of anatomical charts, both of which made his hackles tingle. Then he was inside of the room, and the sight of Tinker Elliott's small, desirable head bent over the binocular microscope made him forget his fears. He stepped forward and kissed her on the ear.

She gasped, startled, and squinted at him through half-closed eyelids.

"Nice going," she said sharply.

"Thought you liked it," he said.

"I do. Want to try it over again?"

"Sure."

"Then don't bother going out and coming in again. Just stay here."

Cal listened to the words, but not the tone.

"Don't mind if I do. Shall we neck in earnest?"

"I'd as soon that as having you pop in and out, getting my nerves all upended by kissing me on the ear."

"I like kissing you on the ear."

Tinker Elliott came forward and shoved him onto a tall laboratory chair. "Good. But you'll do it at my convenience, next time."

"I'd rather surprise you."

"So I gathered. Why did you change your suit?"

"Change my suit?"

"Certainly."

"I haven't changed my suit."

"Well! I suppose that's the one you were wearing before."

"Look, Tinker, I don't usually wear a suit for three months. I think it was about time I changed. In fact, this one is about done for."

"The one you had on before looked all right to me."

"So? How long do you expect a suit to last, anyway?"

"Certainly as long as an hour."

"Hour?"

"Yes . . . say, what is this?"

Cal Blair shook his head. "Are you all right?"

"Of course. Are you?"

"I think so. What were you getting at, Tinker. Let's start all over again."

"You were here an hour ago to bid me hello. We enjoyed our reunion immensely and affectionately. Then you said you were going home to change your suit—which you have done. Now you come in, acting as though this were the first time you'd seen me since Tony and I took off for Titan three months ago."

Cal growled in his throat.

"What did you say?" asked Tinker.

"Benj."

"Benj! Oh no!"

"I haven't been here before. He's my . . . my—"

"I know," said Tinker softly, putting a hand on his. "But no one would dream of masquerading as anyone else. That's unspeakable!"

"It's ghastly! The idea is beyond revolting. But, Tinker, Benj Blair is revolting—or worse. We hate each other—"

"I know." Tinker shuddered and made a face that might have resulted from tasting something brackish and foul. "*Ugh!* I'm sorry, Cal."

"I'm raving mad! That dupe!"

"Cal—never say that word again. Not about your twin brother."

"Look, my neuropsychiatristic

female, I'm as stable as any twin could be. Dwelling on the subject of duplication is something I won't do. But the foul, rotten trick. What was he after, Tink?"

"Nothing, apparently. Just up to deviltry."

"Deviltry is fun. He was up to something foul. Imagine anyone trying to take another's identity. That's almost as bad as persona duplication."

Tinker went pale, and agreed. "Theft of identity— I imagine that Benj was only trying to be the stinker he is supposed to be. That was a rotten trick"—Tinker wiped her lips, applied neoform on a cello-cotton pad and sterilized them thoroughly—"to play on a girl." She looked at the pad and tossed it into the converter chute. "A lot of good that will do. Like washing your hands after touching a criminal. Symbolic—"

"Tinker, I feel cheated."

"And I feel defiled. Come here, Cal," The result of his approach was enough to wipe almost anything from the minds of both. It went a long way towards righting things, but it was not enough to cover the depths of their mental nausea at the foul trick. That would take years—and perhaps blood—to wash away.

"Hello, Cal," she said, as they parted.

"I'm glad you're back."

"I know." she laughed. "Only Dr. Tinker Elliott could drag Specialist Calvin Blair into anything resembling a hospital, let alone a neurosurgical laboratory."

"Wild horses couldn't," he admitted.

"That's a left-handed compliment, but I'll treasure it—with my left hand," she promised.

"Benj- and I can speak without foaming at the mouth now—couldn't have played that trick on you if you'd seen me during the last three months."

"True. Three months' absence from you made his disguise perfect. I'd forgotten just enough. The rotter must have studied . . . no, he's an identical twin, isn't he"

"Right," gritted Cal. "But look, Tinker. This is no place to propose. But why not have me around all the time?"

"Nice idea," said Tinker dreamily. "You'll come along with us on the next expedition, of course?"

"You'll not go," said Cal.

"Now we're at the same old impasse. We've come up against it for three years, Cal."

"But why?"

"Tony and I promised ourselves that we'd solve this mystery before we quit."

Cal snorted. "You've been following in the footsteps of medical men who haven't solved Makin's Disease in the last hundred years. You might never solve it."

"Then you'll have to play my way, Cal."

"You know my opinion on that."

"You persist in putting me over a barrel, Cal. I think a lot of you. Enough—and forgive me for thinking it—to ignore the fact that you are a twin. But I'll not marry you

unless we can be together—somehow. I love surgery and medical research. I like adventuring into strange places and seeking the answer to strange things. Tony is my ideal and he loves this life too, as did our father. It's in our blood, Tony's and mine, and saying so isn't going to remove it."

Cal nodded glumly. "Don't change," he said firmly. "Not willingly. I'm not going to be the guy to send someone to a psychiatrist to have his identity worked over. I've been hoping that you'd get your fill of roistering all over the Solar System, looking for rare bugs and viruses. I've almost been willing to get some conditioning myself so that I could join you—but you know what that would mean."

"Poor Cal," said Tinker softly, "You do love me. But Cal, don't you change either! Understand? If you change your identity, you'll not be the Cal I love. If the change comes normally, good and well, but I'll not have an altered personality for my husband. You love your ciphers and your codes and your cryptograms. You are a romanticist, Cal, and you stick to the rapier and the foil."

"Excepting that I get accused of cowardice every now and then," snorted Blair.

"Cowardice?"

"I've a rather quiet nature, you know. Nothing really roils me except Benj and his tricks. So I don't go around insulting people. I've been able to talk a lot of fights away by sheer reasoning, and when the battle is thrust upon me, I choose the rapier. There's been criticism, Tink, because some have backed out rather than cross rapiers with me, and those that do usually get pinked. I've been accused of fighting my own game."

"That's smart. That's your identity, Cal, and don't let them ridicule you into trying drillers."

"I won't. I can't shoot the side of a wall with a needle beam."

"Stay as you are, Cal."

"But that's no answer. You like space flying. I hate space flying. You love medicine and neurosurgery. I hate the smell of neoform. I hate space and I hate surgery—and you love 'em both. To combine them? To call them Life? No man in his right mind would do that. No, Tinker, I'll have nothing to do with either!"

The ghost of Hellion Murdoch, pirate, adventurer, and neurosurgeon stirred in his long, long sleep. Pirates never die, they merely join their fellows in legend and in myth, and through their minions—the historians and novelists—their heinous crimes are smoothed over, and they become uninhibited souls that fought against the fool restrictions placed upon them by a rotten society.

Hellion Murdoch had joined his fellows, Captain Kidd, Henry Morgan, Dick Turpin, and Robin Hood three hundred and fifty years ago. And like them, he went leaving a fabulous treasure buried somewhere. This came to be known to all as Murdoch's Hoard, and men sought up and down the Solar Sys-

tem for it, but it was never found.

But the words of Cal Blair aroused the ghost of Hellion Murdoch. He listened again as the words echoed and re-echoed through the halls of his pirate's citadel in the hereafter. The same halls rang with his roaring laughter as he heard Calvin Blair's words. He sprang to his feet, and raced with the speed of thought to a mail chute.

With his toe, the ghost of Hellion Murdoch dislodged a small package from where it had lain for years. With his ghostly pencil, he strengthened certain marks, plying the pencil with the skill of a master-counterfeiter. The stamp was almost obliterated by the smudged and unreadable cancellation. The addressee was scrawled and illegible, but the address was still readable. Water had done its job of work on the almost imperishable wrapper and ink of the original, and when the ghostly fingers of Hellion Murdoch were through, the package looked like a well-battered bundle, treated roughly by today's mail.

With his toe, he kicked it, and watched it run through the automatic carrier along the way to an operating post office. It came to light, and the delivery chute in Cal Blair's apartment received the package in the due course of time.

Cal Blair looked at the package curiously. He hadn't ordered anything. He was expecting nothing by mail. The postmark—completely smudged. He paid no attention to the stamp, which might have given him to think. The address? The numbers were fairly plain and they were his, Cal Blair's. The name was scrawled, and the wrapping was scratched across the name. Obviously some sharp corner of another package had scratched it off.

He inspected the package with the interest of a master cryptologist, and then decided that opening the package was the only way to discover the identity of the owner. Perhaps inside would be a packing slip or something that might be traced—

Paper hadn't changed much in the last five hundred years, he thought ruefully. At least, not the kind of paper this was wrapped in. No store, of course. Someone sending something almost worthless, no doubt, and wrapping it in the first piece of paper that was handy. He tore the wrapping carefully, and set it aside for future study.

Inside the package was a tin box, and inside the box was a small cross standing on a toroidal base. The whole trinket stood two inches tall, and the crossarms were proportional—though they were cylindrical in cross-section instead of rectangular.

It would have made a nice ornament for an altar, or a religious person's desk except for the tiny screw-stud that projected out of the center of the bottom. That prevented it from standing. Other taped holes in this flat base aroused his attention.

"This is no ornament," said Cal Blair, aloud. "No mere ornament would require that rugged mounting."

There seemed to be some microscopic engravings around the surface of the toroid. Cal set up the microscope and looked. Characters in the solarian were there, microengraved to perfection. But they were in no order. They had a randomness that would have made no sense to any but a master cryptologist—a specialist. To Cal Blair they took on a vague pattern that might be wishful thinking, and yet his reason told him that men do not microengrave things just to ornament them. A cipher it must be by all logic.

He was about to take it into the matter-converter and enlarge it mechanically, when he decided that it might spoil the things for the owner if he did and was not able to return it to the exact size. He decided on photographs.

Fully three hours later, Cal Blair had a complete set of photographic enlargements of the microengravings.

Then with the patience and skill of the specialist cryptologist, Cal Blair started to work on the characters.

The hours passed laboriously. The wastebasket filled with scrawled sheets of paper, and mathematical sequences. Letters and patterns grew beneath his pencil, and were discarded. Night passed, and the dawn grayed in the east. The sun rose, and cast its rays over Cal's desk, and still he worked on, completely lost in his work.

And then he looked startled, snapped his fingers, and headed across the room for an old book. It was a worthless antique, made by the reproducer in quantity. It was a Latin dictionary.

Latin. A dead and forgotten language.

Only his acquaintance with the folks at the Solarian Medical Association could have given him the key to recognition. He saw one word there, and it clicked. And then for four solid hours he cross checked and fought the Latin like a man working a crossword puzzle in an unknown language, matching the characters with those in the dictionary.

But finally the message was there before him in characters that he could read. It was clear and startling.

"The Key to Murdoch's Hoard!" breathed Cal Blair. "The fabulous treasure of the past! This trinket is the Key to Murdoch's Hoard!"

A cavity resonator and antenna system, it was. The toroid base was the cavity resonator, and the cross was the feedline and dipole antenna. Fitted into the proper parabolic reflector and shock excited periodically, it would excite a similar antenna at the site of Murdoch's Hoard. This would continue to oscillate for many milliseconds after the shock-excitation. If the Key were switched to a receiving system—a detector—the answering oscillation of the sympathetic system would act as a radiator. Directive operation—scanning—of the parabolic reflector would give directive response, leading the user to the site of Murdoch's Hoard.

How men must have fought to find Murdoch's Hoard in the days long past!

Cal Blair considered the Key. It would lead him to nothing but roistering and space travel and the result would be no gain. Yet there was a certain scientific curiosity in seeing whether his deciphering had been correct. Not that he doubted it, but the idea sort of intrigued him.

The project was at least *unique*.

He looked up the history of the gadget in an ancient issue of the Interplanetary Encyclopedia and came up with the following description:

Murdoch's Hoard: An unknown treasure said to be cached by the pirate Hellion Murdoch. This treasure is supposed to have been collected by Murdoch during his years as an illegal neurosurgeon. For listings of Murdoch's better known contributions to medicine, see. . . . (A list of items filled half a page at this point, which Cal Blair skipped.)

Murdoch's Hoard is concealed well, and has never been found. The Key to Murdoch's Hoard was a minute cavity resonator and antenna system which would lead the user to the cache. No one has been able to make the Key function properly, and no one was ever able to break the code, which was engraved around the base.

The value of the Key is doubtful. Though thousands of identical Keys were made on the Franks-Channing matter reproducer, no scientist has ever succeeded in getting a response. Engravings on the base are obviously a code of some sort giving instructions as to the use of the Key, but the secret of the code is no less obscure than the use of the Key itself. The original may be identified by a threaded stud protruding from the bottom. This stud was eliminated in the reproduction since it interfered with the upright position of the Key when used as an ornament. The original was turned over to the Interplanetary Museum at the time of Channing's death from which place it has disappeared and has been rediscovered several times. At the present time, the original Key to Murdoch's Hoard is again missing, it having been stolen out of the Museum for the seventeenth time in three hundred years.

Cal smiled at the directions again. He envisioned the years of experimentation that had gone on with no results. The directions told why. Without them, its operation was impossible. And yet it was so simple.

The idea of owning contraband bothered Cal. It belonged to the Interplanetary Museum, by rights. It would be returned. Of that, Cal was definite. But some little spark of curiosity urged him not to return it right away. He would return it, but it had been gone for several years and a few days more would make no difference. He was far from the brilliant scientist—any of the engineers of the long-gone Venus Equilateral Relay Station would have shone like a supernova against his own dim light. But he, Cal Blair, had the answer and they did not.

But it was more to prove the correctness of his own ability as cryptographer that he took on the job of making the little Key work.

The job took him six weeks. An expert electronics engineer would have done it in three days, but Cal had no laboratory filled with equipment. He had neither laboratory technique nor instruments nor a great store of experience. He studied books. He extracted a mite

of information here and a smidgin there, and when he completed the job, his equipment was a mad scramble of parts. Precision rubbed elbows with sloppiness, for unlike the trained technician, Cal did not know which circuits to let fly and which circuits needed the precise placing. He found out by sheer out-and-try and by finally placing everything with care. The latter did not work too good, but continuous delving into the apparatus disrupted some of the lesser important lines to the point where their randomness did not cause coupling. The more important lines complained in squeals of oscillation when displaced, and Cal was continually probing into the gear to find out which wire was out of place.

He snapped the main switch one evening six weeks later. With childlike enthusiasm he watched the meters register, compared notes and decided that everything was working properly. His testing equipment indicated that he was operating the thing properly—at least in accordance with the minute engravings on the side.

But with that discovery—that his rig functioned—there came a letdown. It was singularly unexciting. Meters indicated, the filaments of the driver tubes cast a ruddy glow behind the cabinet panel, a few ill-positioned pilot lamps winked, and the meter at the far end of the room registered the fact that he was transmitting and was being detected. It was a healthy signal, too, according to the meter, but it was both invisible and inaudible as well as not affecting the other senses in anyway.

Now that he had it, what could he use it for?

Treasure? Of what use could treasure be in this day and age? With the Channing-Franks matter reproducer, gold or any rare element could be synthesized by merely introducing the proper heterodyning signal. Money was not metal any more. Gold was in extensive use in electrical works and platinum came in standard bars at a solarian credit each. Stable elements up to atomic weights of six or seven hundred had been made and investigated. A treasure trove was ridiculous. Of absolutely no value.

The day of the Channing-Franks development was after the demise of Hellion Murdoch. And it was after the forty years known as the Period of Duplication that Identium was synthesized and became the medium of exchange. Since identium came after Murdoch's demise by years, obviously Murdoch's Hoard could only be a matter of worthless coin, worthless jewels, or equally worthless securities.

Money had become a real medium of exchange. Now it was something that did away with going to the store for an egg's worth of mustard.

So Cal Blair felt a letdown. With his problem solved, there was no more to it, and that was that. He smiled. He'd send the Key to Murdoch's Hoard to the museum.

And, furthermore, let them seek Murdoch's Hoard if they wanted to. Doubtless they would find some

uniques there. A pile of ancient coins would be uniques, all right. But the ancient papers and coins and jewels would not be detectable from any of the duplicates of other jewels and coins of that period that glutted the almost-abandoned museum.

Benj Blair snarled at the man in front of him. "You slinking dupe! You can't get away with that!"

The man addressed blanched at the epithet and hurled himself headlong at Benj. Cal's twin brother callously slipped a knife out of his belt and stabbed down on the back of his attacker. It was brutal and bloody, and Benj kicked the dead man back with a lifted knee and addressed the rest of the mob.

"Now look," he snarled, "it is not smart. This loke thought he could counterfeit. He's a dead idiot now. And anybody that tries to make identium in this station or any place that can be traced to any one of us will be treated likewise. Get me?"

There was a growl of absolute assent from the rest.

"Is there anyone who doesn't know why?"

"I'm dumb," grinned a man in the rear. "Make talk, Benj."

"O.K.," answered Benj. "Identium is a synthetic element. It is composed of a strictly unstable atom that is stabilized electronically. It starts off all right, but at the first touch of the scanning beam in the matter-converter, it becomes unstable and blows in a fission-reaction. Limpy, there, tried it once and it took his arm and leg. The trouble with identium explosions is the fact that the torn flesh is sort of seared and limb-grafting isn't perfect. That's why Limpy is Limpy. Then, to make identium, you require a space station in the outer region. The manufacture of the stuff puts a hellish positive charge on the station which is equalized by solar radiation in time. But the station must be far enough out so that the surge inward from Sol isn't so high that the inhabitants are electrocuted by the change in charge.

"Any detector worthy of the name will pick it up when in operation at a half light-year—and the Patrol keeps their detectors running. That plus the almost-impossible job of getting the equipment to perform the operation. I'll have no identium experiments here."

A tiny light winked briefly above his head. It came from a dusty piece of equipment on a shelf. Benj blinked, looked up at the winking light, and swore.

"Tom!" he snorted. "What in the name of the devil are you doing?"

The technician put his head out of the laboratory door. "Nothing."

"You're making this detector blink."

"I'm trying to duplicate an experiment."

"Trying?"

Tom grinned. "I'm performing the actual operation of the distillation of alcohol."

"That shouldn't make the detector blink."

"There's only one thing that will do that!"

"Not after all this time."

"It's not been long. About ten years," objected Tom. "Look, Benj. Someone has found the Key. And not only that, but they've made it work."

"I'd like to argue the point with you," said Benj pointedly. "Why couldn't you make it tick when we had it seven years ago? You were sharp enough to make a detector, later."

"Detecting is a lot different than generating, Benj. Come on, let's get going. I want to see the dupe that's got the Key."

Had Cal Blair been really satisfied to make his gadget work, he might never have been bothered. But he tinkered with it, measured it, and toyed with it. He called Tinker Elliott to boast and found that she had gone off to Northern Landing with her illustrious brother to speak at a medical convention, and so he returned to his toy. Effectively, his toying with the Key gave enough radiation to follow. And it was followed by two parties.

The first one arrived about midnight. The doorbell rang, and Cal opened it to look into the glittering lens of a needle beam. He went white and retreated backwards until he felt a chair behind his knees. He collapsed into the chair.

"P-p-p-put that thing away!"

"This?" grinned the man, waving the needle beam.

"Shut up, Logy," snapped the other. To Cal, he said: "Where is it?"

"W-w-w-where is w-w-w-what?"

"The Key."

"Key?"

"Don't be an idiot!" snarled the first man, slapping Cal across the face with the back of his hand. Cal went white.

"Better kill me," he said coldly, "or I'll see your identity taken!"

"Cut it, Jake. Look, wiseacre, where did you get it?"

"The Key? It came in the mail."

"Mail hell! That was mailed ten years ago!"

"It got here six weeks ago."

"Musta got lost, Logy," offered Jake. "After all, Gadget's been gone about that long."

"That's so. Those things do happen. Poor Gadg. An' we cooled him for playing smart."

"We wuz wrong."

"Yep. So we was. Too bad. But Gadget wasn't too bright—not like this egg. He's made it work."

"Logy, you're a genius."

"So we chilled Gadget because we thought he was playin' smart by tryin' to swipe the pitch. He didn't lam wit' the Key at all."

"How about this one?" asked Logy.

"He ain't going to yodel. Better grab him and that pile of gewgaws. The rest of the lads'll be here too soon."

"Rest?"

"Sure. The whole universe is filled wit' detectors ever since Ellswort' made the first one."

"Git up, dope," snapped Jake.

motioning to the door with his beam.

Blair walked to the door with rubber joints in his knees. Logy lifted the equipment from the table and followed Jake. "He ain't made no notebook," complained Jake.

"He had some plans," said Logy, "but the fool set the stuff on 'em and they're all chewed up. He can make 'em over."

"O.K. Git goin', Loke."

Blair could not have protested against the pair unarmed. With two needle beams trained on his back, he was helpless. He went as they directed, and found that his helplessness could be increased. They forced him into a spacecraft that was parked on the roof.

The autopilot was set, and the spacecraft headed across the sky, not into space, but making a high trajectory over Terra itself. Once into the black of the superstratosphere, they turned their attention back to Cal.

"Gonna talk?"

"W-w-w-what do you w-w-want me to s-s-say?" chattered Cal.

"Dumb, isn't he?"

"Look, sweety, tell us what's with this thing."

"It's a c-c-cavity resonator."

"Yeah, so we've been told," growled Logy. "What makes?"

"B-b-b-but look" stammered Cal. "W-w-what good'll it do you?"

"Meaning?" snarled Jake.

"Whatever treasure might be there is useless now."

Jake and Logy split the air with peals of raw laughter. Jake said: "He is dumb, all right."

"Just tell us, bright-eyes. We'll decide," snapped Logy.

"W-w-well, you send out a signal with it and then stop it and switch it to the detecting circuit. You listen, and the signal goes out and starts the other one going like tapping a bell. It resonates for some time after the initial impulse. It returns the signal, and by using the directional qualities, you can follow the shock-excited second resonator right down to it. Follow?"

"Yeah. That we all know," drawled Jake in a bored voice. His tone took on that razor edge again and he snarled: "What we're after is the how, get me? How?"

"Oh, w-w-w-well, the trick is—"

"Creeps!" exploded Logy. He crossed the cabin in almost nothing flat and jerked upward on the power lever.

The little ship surged upward at six gravities, making speech impossible. Blair wondered about this, sitting there helpless and scared green, until a blast of heat came from behind, and the ship lost drive. A tractor beam flashed upward, catching the ship and hurling it backwards. The reaction threw all three up against the ceiling with considerable force, and the reverse acceleration generated by the tractor's pull kept them pasted to the ceiling. Another ship was beside them in a matter of seconds, and four spacesuited men breached the air lock and entered, throwing their helmets back.

"Jake Jackson and Freddy

Logan," laughed the foremost of the newcomers. "How nerce of you to meet us here."

"Grab the blinker," said the one behind.

"Naturally. Naturally. Pete and Wally take Blair. Jim and I'll muscle the gripper."

Two of them carried Cal to the larger ship. The other two scooped up the equipment and carried it behind them. Once inside, the tractors were cut and the smaller ship plummeted towards Terra. With no concern over the other ship and its two occupants, they hurled Cal back against the wall while they put his apparatus on the navigator's table.

"Very nice and timely rescue, eh Cal?"

Cal whirled. "Benj," he snarled. "Might have known—" He started forward, but was stopped by the ugly muzzles of three needle beams that waggled disconcertingly at the pit of his stomach. He laughed, but it had a wild tone. "Go ahead and blast! Then run the Key yourselves!" he hurled at them. But he stopped, and the waggling of the three weapons became uncertain.

"Hell's fire," snorted Pete, looking from one to the other. "They're duplicates!"

Cal leaped forward, smashed Pete's beam up, where it furrowed the ceiling. His fist came forward and his knee came up. Beneath Cal's arm flashed a streak of white. It caught Pete in the stomach and passed down to the knee, trailing a bit of smoke and a terrible odor. Cal dropped the lifeless form and whirled. Benj stood there, his needle beam held rock-steady on the form that lay crumpled beneath Cal's feet.

Benj addressed the other two. "My brother and I have one thing in common," he said coolly. "Neither of us cares to be called a duplicate!" He holstered his weapon and addressed Cal. "Where is it?"

"Where is what?" asked Cal quietly.

"Murdoch's Hoard."

"I haven't had time to find out."

"O.K. So tell us how to make this thing run."

"I'll be psyched if I do."

"You'll be dead if you do not," warned Benj.

"Some day, you stinker, I'll take the satisfaction of killing you."

"I'll never give you cause," sneered Benj.

"Stealing my identity is plenty of cause."

"You won't take satisfaction on that," taunted Benj. "Because you'd have to call me and I'll accept battle with beams."

Cal considered. Normally, he would have been glad to demonstrate to anyone the secret of the Key. But he would have died before he told Benj the time of day. But another consideration came. The Key was worthless—and less valuable would be the vast treasures of Murdoch's Hoard. Why not give him the Key and let him go hunting for the useless stuff?

Wally waved an instant-welder in front of Cal's nose. The tip glowed like a white-hot stylus. "Might

singe him a bit," offered Wally.

"Put the iron down," snapped Benj. Wally laid the three-foot shaft on its stand, where it cooled slowly. "Cal wouldn't talk. I know. That thing would only make him madder than a hornet."

"So what do we do with the loke?" asked Wally.

"Take him home and work on him there," said Benj. "Trap his hands."

No more was said until they dropped onto Cal's rooftop. He was ushered down the same way that he had gone up—with beams looking at his backbone. They carried his equipment down, and set it carefully on the table.

"Now," said Benj. "Make with the talk."

"O.K.," said Cal. "This is a cavity resonator—"

"This is too easy," objected Wally. "Something's fishy."

Cal looked at the speaker with scorn. "You imbecile. You've been reading about Murdoch's Hoard. Vast treasure. Money, jewels, and securities. Valuable as hell three hundred and fifty years ago, but not worth a mouthful of ashes today. Why shouldn't I tell you about it?"

"That right, boss?" asked Wally.

"He's wishful thinking," snorted Benj.

Cal smiled inwardly. His protestation of what he knew to be the truth was working. The desire to work on Benj was running high, now, and Cal was reconsidering his idea of handing the thing to Benj scot-free.

"Let me loose. I'll show you how it works," he said.

"Not a peep out of it," warned Benj. "Wally, if he touches that switch before he takes the Key out of the reflector, drill him low and safe—but drill him!"

Cal knew the value of that order. The hands were freed, and he stepped forward with tools and removed the Key. "Now?" he asked sarcastically.

"Go ahead," said Benj.

"Thanks," grinned Cal. "That I will!" He took three steps forward and went out of the open window like a running jackrabbit. His strong fencer's wrists caught the trellis at the edge and he swung wide before he dropped to the ground several feet below. He landed running, and though the flashes of the needle beams scored the ground ahead of him, none caught him. He plowed through a hedge, jumped into his car, and drove off with a swaying drive that would disrupt any aim.

He drove to the Solarian Medical Association, where he found Dr. Lange in charge. In spite of the hour of the morning, he went in and spoke to the doctor.

Lange looked up surprised. "What are you doing here at this hour?" he asked with a smile.

"I've got a few skinned knuckles that hurt," said Cal, showing the bruises.

"Who did you hit?" asked Lange. "Fisticuffs isn't exactly your style, Cal."

"I know. But I was angry."

Lange inspected Cal's frame. "Wouldn't like to be the other guy," he laughed. "But look, Cal. Tinker will be more than pleased."

"That I was fighting? Why?"

"You're a sort of placid fellow, normally. If you could only stir up a few pounds of blood-pressure more frequently, you'd be quite a fellow."

"So I'm passive. I like peace and quiet. You don't see me running wild, do you?"

"Nope. Tell me, what happened?"

Cal explained in sketchy form, omitting the details about Benj.

"The Key to Murdoch's Hoard?" asked Lange, opening his eyes.

"Sure."

"What are you going to do with it?"

"Send it back to the museum. They're the ones that own it."

"You'll give them Murdoch's Hoard if you do."

"Granting for the moment that the Hoard is valuable," laughed Cal, "it is still the property of the museum."

"Wrong. The law is a thousand years old and still working. Buried Treasure is his who finds it. That Hoard is yours, Cal."

"Wonderful. About as valuable as a gallon of lake water in Chicago. It's about as plentiful."

"May I have the Key?" asked Lange eagerly.

Cal stopped. This was getting him down. First that pair of ignorant crooks. Then his brother, trying to steal from him something that both knew worthless—just for the plain fun of stealing he'd believed. But now this man. Dr. Lange was advanced in years, a brilliant and stable surgeon. Was he wrong? Did the Key really represent something worth-while? If so, what on earth could it be? A hoard of treasure in a worthless medium of exchange and with duplicates all over the System? What could Murdoch's Hoard be that it made men fight for it even in this day?

"Sorry," said Cal. "This is my baby."

He said no more about it.

Whatever the Hoard might be, it was getting Cal curious. That and the desire to get the best of Benj worked on him night and day during the next week. He was forced to hide out all of that time, for Benj was looking for him. The equipment still required a knowing hand to run it—any number of technicians had concocted the same circuit to drive the Key—it was the technique, not the equipment that made it function properly.

He toyed with the idea for some time. The desire to go and see for himself, however, was not greater than his aversion to space travel. Cal had an honest dislike, he had tried space travel three times when business demanded it. He'd hated it all three times.

But there it was—and there it stayed. The whole affair peaked and then died into a stasis. Murdoch's Hoard was something that

Cal Blair would eventually look into—some day.

The one thing that bothered him was his hiding-out. He hated that. But he remained under cover until Tinker Elliott returned and then he sought her advice. She made a date to meet him at a nearby refreshment place later that afternoon.

The major-domo came up with a cheerful smile as Cal sauntered into the chromium-and-crimson establishment. "At your service," greeted the major-domo.

"I'm meeting a friend."

"A table will be reserved. Meanwhile, will you avail yourself of our service in the bar?"

Cal nodded and entered the bar. He climbed up on a tall bar stool and took cigarettes from his pocket. The bartender came over immediately. "Your service?"

"Palan and ginger," said Cal. He was still working on the dregs of his first glass when Tinker came up behind him and seated herself on the stool beside.

"Hi, Tink," he smiled.

"Hello. What are you drinking?"

"Palan and ginger."

"Me too," she said to the bartender. "Cal, you are a queer duck. Your favorite liquors come from Venus and Mars. You seem to thrive on those foul-tasting lichens from Titan as appetizers. You gorge yourself on Callistan loganberry, and your most-ordered dinner is knolla. Yet you hate space travel."

"Sure," he grinned. "I know it. After all, there's nothing that says that I have to go and get it. Four hundred years ago, Tink, there were people who ate all manner of foods that they never saw in the growing stage. And a lot of people lived and died without ever seeing certain of their meat animals."

"I know. Gosh. They used to kill animals for meat back then. Imagine!"

Cal looked sour-faced, and silence ensued for a moment. Then Tinker's face took on a self-horror.

"Hey. That look isn't natural. What's up?"

"Order me a big, powerful, hardy, pick-me-up," said Tinker. "And I'll tell you—if you really want to know."

"I do and I will," said Cal, wonderingly. He ordered straight palan which Tinker took neat, coughed, and then brightened somewhat.

"Now?" asked Cal.

"Better order another one for you," said Tinker. "Anyway, we had one of those jobs last night."

"What jobs?"

"An almost-incurable."

"Oh," said Cal with a shiver. He ordered two more straight drinks, in preparation. "Go ahead and tell, Tink. You won't be free of it until you spill it."

"It was a last resort case and everybody knew it. Even the patient—that's what made it so tough. It's distasteful enough to consider a duplicate when you're well. But to be lying on the brink and then know that they're going to make a duplicate of you for experimental surgery—I can't begin to tell. The

patient took it, though.

"And even that wouldn't be too bad. We made our duplicates and went to work on one immediately. We operated, located the trouble and corrected it. The third duplicate lived. Then we operated on the patient successfully. I didn't mind the first two dupes, Cal. It was the disposing of the cured duplicate that got me. It was like . . . no, it *was* disposing of an identity." Tink shuddered, and then drained her second shot of palan simultaneously with Cal.

"And you wonder why I dislike medicine," he said flatly.

"I know—or try to. But look, Cal. Aside from the distaste, look at what medicine has been able to accomplish."

"Sure," he said without enthusiasm.

"Well, it has."

"But at what a cost."

"Cost? Very little cost," snapped Tinker. "After all, once one has the stomach to dispose of a duplicate, what is the cost? Doctors bury their mistakes just as always, but the mistake is a duplicate. The sentience remains."

"How can you tell the real article from the duplicate?"

"We keep track."

"I know that. What I mean is this: A man is born, lives thirty years as an identity. He is duplicated for surgical purposes at age thirty. All duplicates and the original are he—complete with thought and habit patterns of thirty years. They are identical in every way right down to the dirt on their hands and the subconscious thoughts that pass inside of their brains. Their egoes are all identical. When you kill the duplicate, you might as well kill the identity. The duplicate is as much an identity as the original."

"True," said Tinker. "However, once a duplicate is made, the identities begin to differ. One will have different experiences and different ideas and thoughts. Eventually the two duplicates are separate characters. But in deference to the identity, it is he that we must cure and preserve. For the instant that the duplication takes place, the character starts to differ. We can not destroy the original. The duplicate is not real. It . . . how can I say it? . . . hasn't enjoyed . . . yes it has, too. It was once the original. Cal, you're getting me all balled up."

"Why not let them both live?"

Tinker looked at Cal with wonder. "Inspect your life," she said sharply. "You and Benj. How do I know right now that you are not Benj?"

Cal recoiled as though he had been struck.

"You're Cal, I know. That distaste was not acting. It was too quick and too good, Cal. But can you see what would happen? What is a dupe's lot?"

Cal nodded slowly. "He's scorned, taunted, and hated. He cannot masquerade too well—that in itself is a loss in identity. Yes—it is a matter of mercy to dispose of the duplicate. The whole thing is

wrong. Can't something be done about it?"

"Not until you change human nature," smiled Tinker.

"It's been done before."

"I know. But not a thing as ingrained as this."

"Ingrained? Look, Tinker Elliott, up to the period of duplication, three hundred years ago, twins and multiple-births used to dress and act as near alike as possible."

"Hm-m-m. That was before a duplicate could be made. Double birth was something exceptional, and unique. The distaste against duplicates bred the hatred between twins, I know."

"We might be able to change human nature then."

"Not in our lifetime."

"I guess not. What was the big kicker, Cal?"

"About duplication? Well, there was a war in Europe and both warring countries put armies of duplicates into the field. The weapons, of course, were manufactured right along with the troops. There were armies of about nineteen million men on each side, composed of about a thousand different originals. They took the best airmen, the best gunners, the best rangers, the best officers, the best navigators, and the best of every branch of fighting and ran them into vast armies. It was stalemate until the rest of the world stepped in and put a stop to it. Then there were thirty-eight million men, all duplicates, running around. The mess that ensued when several thousand men tried to live in one old familiar haunt . . . it was seventy years before things ran down."

"That would send public opinion reeling back," smiled Tinker. "But do you mind if we change the subject? I think that I've gotten last night's experience out of my system. What was all this wild story you were telling me?"

"Let's stroll towards food," he said. "I'll tell you then." Cal dropped some coins on the bar to take care of the check and they went into the dining room. The waiter led them to their table and handed them menus.

"This isn't needed," he told the waiter. "I want roast knolla."

"Please accept the apology of the management," said the waiter sorrowfully. "Today we have no knolla."

"None?" asked Cal in surprise. "That's strange. Every restaurant has knolla."

"Not this one," smiled the waiter. "An accident, sir. The alloy disk containing the recording of the roast knolla dinner slipped from the chef's hands less than an hour ago and fell to the floor. It was thought to be undamaged, close inspection showed it all right. But it was tried, and the knolla came out with the most peculiar flavor. The master files haven't replaced it yet. It will be four hours before they get to our request for transmission of the disk. The engineer there laughed and said something about molecule-displacement when I mentioned the peculiar flavor. It was *most* peculiar. Not distressing, mind, but most alien. We're keep-

ing the damaged disk. It may be a real unique."

"Good eating?"

"I'll reserve opinion on that until we find out how we like it ourselves," smiled the waiter. "I'd recommend something else, sir."

Cal ordered for both Tinker and himself. Then he leaned forward on his elbows and gave Tinker the highlights of his life for the past few weeks. He finished with the statement: "It's worthless, but somehow I can't see letting Benj get it."

"Worthless? M u r d o c h ' s Hoard?"

"Shall I go into that again? Look, Tinker. Murdoch's era was prior to the discovery of the matter-duplicator, which followed the Channing-Franks matter transmitter by only a few weeks. Now, anything that Murdoch could cache away would be in currency of that time. The period of duplication hadn't come yet, and the eventual invention or discovery of identium as a medium of exchange had not come. So what good is Murdoch's Hoard? It must be of some value. But what? I could discount everything as ignorance or hatred except Dr. Lange's quick desire for it. Lange is no fool, Tink. He knew what he was getting. Darn it all, I feel like going out and running the Hoard down myself!"

Tinker's laugh was genuine and spontaneous.

Cal bridled. "Funny? Then tell me why."

"You, who hates roistering, adventure, space, and hell-raising. Going after Murdoch's Hoard! That, I want to see."

"So that you can laugh at my fumbling attempts?"

Tinker sobered. "I've been unkind, Cal. But you are not equipped to make a search like that."

"No?"

"You, with your quiet disposition and easy-going ways. Yes, Cal, I can be honest with you. Forgive me, but the idea of watching you conduct a wild expedition like that intrigues me," Tinker became serious for a moment. "Besides, I'd like to be there when you open Murdoch's Hoard."

"Hm-m-m. Well, it's just an idea."

"You'll get right back into your rut, Cal. You don't really intend to do anything about it, do you?"

"Well—"

"Cal—would you give me the Key?"

"What!"

"I mean it."

"Tinker—what is Murdoch's Hoard?"

"Not unless you give me the Key," teased Tinker.

"Not a Chinaman's chance," said Cal with finality.

"What are you going to do with it?"

"I'm going after it myself!"

Tinker looked into Cal's face and saw determination there. "I want to go along," she said. "Please?"

Cal shook his head. "Nope. I'm not going to have anyone laughing at me. Tell me what it is."

"Take me along."

Cal thought that one over. The idea of having Tinker Elliott along appealed to him. He'd wanted her for years, and this plea of hers was an admission of surrender. But Cal felt that conditional surrender was not good enough. He didn't like the idea of Tinker's willingness to be bought for a treasure unknown. What was really in the depths of her mind he could not guess—unless she were trying to goad him into making the expedition.

"No," he said.

"Then you'll never go," she taunted him.

"I'll go," he snapped. "And I'll prove that I can take care of myself. I hate space-roving, but I'm big enough to do it despite my distaste. Now will you tell me what Murdoch's Hoard is that it is so valuable?"

"Not unless you take me along."

Pride is always cropping up in the wrong place. If Cal or Tinker had not taken such a firm stand in the first place, it would have been easier for either one of them to back down. The argument had started in fun, and was now in deadly earnest. How and where the change came Cal did not know. He reviewed the whole thing again. The first pair were ignorant. Benj was vindictive enough to deprive his brother of a useless thing that interested Cal. Dr. Lange was enigmatic. He had neither personal view or ignorance to draw his desire for Murdoch's worthless Hoard. Tinker Elliott might be goading Cal into making an adventuresome trip for the purpose of bringing him closer to her way of living. He wouldn't put it past her.

But the more he thought about it, the deeper and deeper he was falling into his own bullheadedness. He was going to get Murdoch's Hoard himself if it turned up to be a bale of one hundred dollar bills of the twenty-first century—worth exactly three cents per hundredweight for scrap paper.

Tinker Elliott returned to the Association after the dinner with Cal. She worked diligently for an hour, and loafed luxuriously for another hour. It was just after this that Cal came into her laboratory and grinned sheepishly at her.

"Now what?" she asked. "Changed your mind?"

"Uh-huh," he said.

"Still squeamish about space?"

He nodded.

"Poor Cal," she said, coming over to him. She curled up on his lap and put her head on his shoulder. "What are we going to do about it?"

"I'm going to give you the Key," he said.

She straightened up. "You don't mind if we use it—Tony and I?"

"Not at all."

"I'm going to punish you," she said. "I'm not going to tell what Murdoch's Hoard is until we bring it back."

Cal looked surprised. "All right" he said. "It's worthless anyway. I'll wait."

"You don't want to go along?"

"If I wanted to go at all, I'd go

myself," said Cal.

"O.K. Then wonder about Murdoch's Hoard until we get back. That'll be your punishment."

"Punishment? For what?"

"For not having the kind of personality that would go out and get it."

"All right. Do you want the Key?"

"Sure. Where is it?"

"At home."

"Thought you weren't living at home," said Tinker.

"I haven't been. The Key is there, though. You see, Tink, it takes the technique to make it work rather than the equipment. I'll give you both the equipment and the technique as soon as we get there. I'll demonstrate and write out the procedure. Now?"

"The sooner the better," she said.

Tinker graced her hair with a wisp of a hat and said: "I'm ready."

Putting her hand in his arm, she followed him to the street and they drove to his cottage. He led her inside, seated her, and offered her a cigarette.

"Now, Tinker," he said seriously, "where is it?"

"Where is what?"

"The Key."

"You have it as far as I'm concerned."

"You know better than that."

"You had it."

"No, you're wrong. Cal had it."

"I'm wrong—*who* had it?" exploded Tinker as the words took.

"Cal," smiled he.

"You're Benj."

"Brilliant deduction, Tinker. Now, do you get the pitch?"

"No. You're trying to get Murdoch's Hoard too."

"I haven't your persuasive charm, Tink. The illustrious cryptologist known as my twin brother wouldn't go into space for anything. You want the Key. Ergo, unless I miss my guess, you've been talking and using those charms on him. Don't tell me that he didn't give it to you."

"You stinking dupe."

Benj grew white around the mouth. "Your femininity won't keep you alive too long," he gritted.

"I won't steal anyone's identity." she retorted.

"I'll wreck yours," he rasped. "I'll duplicate you!"

"Then I'll be no better than you are," she spat. "Go ahead. You'll get a dead dupe—two or a million of 'em. I can kill myself in the machine—I know how. I'd do it."

"That wouldn't do me any good," snapped Benj. "Otherwise I'd do it now. I may do it later."

"Keep it up—and I'll see that one half of this duplication is removed. Now, may I leave?"

"No. If you don't know where the Key is—or Cal, you may come in handy later. I think that I might be able to force the Key away from him. He'd die before he permitted me to work on you."

"You rotten personality stealer. You deserve to lose your identity."

"I've still got Cal's."

"Make a million of you," she taunted, "and they'll still be rotten."

"Well, be that as it may. You

and I are going to go to Venus. Murdoch's Hoard is still hidden in the Vilanortis Country. We have detectors. We'll just go and sit on the edge of the fog country and wait until we hear Cal's signal."

"How do you know he's going?"

"Assuming that Tinker Elliott could get more out of him than any other person, it means that he said 'no' and is now preparing to make the jaunt himself. That'll be a laugh. The home-and-fireside-loving Cal Blair taking a wild ride through the fog country of Vilanortis. I'd like to be in his crate, just to watch."

"Cal is no imbecile," said Tink stoutly. "He'll get along."

"Sure, he'll get along. But he won't have fun!"

Tinker considered the future. It was not too bright. The thing to do, of course, would be to go along more or less willingly and look for an escape as soon as Benj's suspicions were lulled by her inaction.

Cal boarded the *Lady Unique* at Mohave Spaceport not knowing of Tinker's capture at the hands of Benj. Benj was careful not to let Cal know of this development, since it would have stopped Cal short and would have possibly have gotten him into a merry-go-round of officialdom and perhaps fighting, in which the Key would most certainly be publicized and lost to all. Courts were still inclined to view the certified ownership rather than the possessor of an object like the Key in spite of the nine points often quoted. This was a case of the unquoted tenth point of the law. Finders of buried treasure were still keepers, but the use of a stolen museum piece to find it might be questioned. So Cal took off in a commercial liner from Mohave at the same time that Tinker was hustled aboard Benj's sleek black personal craft at Chicago.

Cal, during the trip, underwent only a bit of his previous distaste. His feelings were too mixed up to permit anything as simple as *mal de space* to bother him. He was part curiosity, part hatred, part eagerness and part amazement. He found that he'd had no time to worry about space by the time the *Lady Unique* put down at Northern Landing Venus.

With his rebuilt equipment in a neater arrangement, and the Key inserted, all packed into a small case, Cal went to the largest dealer in driver-wing fliers and purchased the fastest one he could buy. He then went to the most famous of all the tinker shops in Northern Landing and spoke with the head mechanic.

"Can you soup this up?" he asked.

"About fifty percent," said the mechanic.

"How long will it take?"

"Couple of hours. We've got to beef up the driver cathodes and install a couple of heavier power supplies as well as tinker with the controls. This thing will be hotter than a welding iron when we get through. Can you handle her?"

"I can handle one like this with ease. I have fast reflexes and quick

nerve response."

"It'll take some time before you get all that there is in it out of it," grinned the mechanic. "Mind signing an affidavit to the effect that we are not to be held responsible for anything that happens with the souping-up?"

"Not at all."

The mechanic went at the job with interest. His estimate was good, and within two hours the flier was standing on the runway, all ready to go. Cal returned from a shopping trip about this time and packed his bundles into the baggage compartment. He paid off, and then took off at high speed and headed south.

Eight hours later the fog bank that marked the Vilanortis Country came before the nose of Cal's flier. He plunged into the fog at half speed and continued on for a full five hundred miles.

He was about halfway through the vast fog bank when he landed and started to install the Key-equipment for operation. The job took him a full day, and he slept on the divan in the cabin of the flier that night. He could have used the flier at night, for there was no choice between night-operation and the thickness of the eternal fog of the Vilanortis Country. In neither case could he see more than a few yards ahead.

And while Cal slept, Benj dropped his flier on the edge of the fog country and waited. The detectors were installed and operating, and the black flier was all ready to surge forward on the trail as soon as Cal's initial signal went forth. Having had more experience in this sort of thing, Benj knew how to go about it. He'd not follow the trail of Cal's signal, but would turn and follow the answering, sympathetic oscillation from the resonant cavity at Murdoch's Hoard. And with that same experience, Benj knew that he could beat Cal to the spot, and possibly be gone with Murdoch's Hoard before Cal got there. He composed a sarcastic sign to leave on the spot for Cal to find. That, he liked. Not only would he have Murdoch's Hoard, but he would be needling his hated brother too.

Tinker had curbed her tongue. What was going to happen she did not know. Benj was quite intent on the mechanics of the chase and hadn't paid too much attention to her except to see that she was completely held. The idea of her, a sentient identity, being restrained with heavy handcuffs made her rage inwardly. Yet she kept her peace. She was not going to attract Benj's attention to her.

So she dozed on the divan in Benj's flier while Benj cat-napped at the wheel of the flier. He would be up and going at the first wink of the pilot light and the first thrumming whistle that came from the detector. He wanted to waste no time. Running down a source of transmitted signal was a matter of a few hours at most, even though it were halfway around the planet. He chuckled from time to time. He'd had Wally tailing Cal, and

had a complete report on the flier and its souping-up. His own flier was capable of quite a few more miles per hour than Cal's, and Benj was well used to his.

And so Tinker dozed and Benj cat-napped until the first glimmer of dawn. Benj shook himself wide-awake, and took a caffein pill to make certain. Reaching back from the pilot's chair, he shook Tinker. "Pay for your board," he growled. "Breakfast is due."

"I'll poison you," she promised.

"There isn't anything poisonous aboard," he said, roaring with laughter.

It was more self-preservation than his threat that made Tinker prepare coffee and toast. Working with manacles on made it difficult, and she hated him for them again. She was carrying the hot coffee to the forecabin when his roar came ringing through the ship.

"Grab on! Here we go!"

The rush of the ship threw her from her feet, and the hot coffee spilled from the pot and scalded her. She screamed.

"Now what?"

"I'm burned."

"Coffee spill? Why didn't you put it down?"

"I wish I'd spilled it on your face," she snapped. "Mind taking these irons off so I can get some isopicrine for the burn?"

He tossed her the key. "If you run now, you'll starve before you get anywhere," he told her. "But stay out of my way. We're on the trail of Murdoch's Hoard."

The thrumming whistle came in clear and strong as Benj headed into the thick fog. And as they drove forward at a wild speed, Benj tinkered with the detector.

He picked up Cal's emitted signal easily and clearly, but was unable to get a response from the other source. He considered, and came to the conclusion that the other resonator might be outside of Cal's range of transmission and therefore inoperative as yet. Knowing Hellion Murdoch's personality by comparison to his own devious way of thinking, he knew that a world-wide broadcast of the response-signal would have been unnecessary. A general location within a hundred miles would have been good enough.

So having no goal but Cal's signal, Benj turned the nose of his flier upon Cal's sharp, vibrating tone and drove deeper and deeper into the fog-blanket of Vilanortis.

As for Cal, he'd awakened by the clock and had tuned up his resonator before taking off. Immediately after making the initial adjustments, and tuning the Key a bit, the response came in strong and clear. Cal lifted the flier and began to trace the source. At almost full throttle he went on a dead straight line for Murdoch's Hoard. He wondered whether his signal were being followed, and suspected that it was. He knew, however, that no one was in possession of the technique of receiving the response, and therefore he drove at high speed. If he could arrive before the others, he would be able to establish his claim on Murdoch's

Hoard, whatever it might be, or perhaps remove it if it were not too bulky.

Once he established the direction of the response, Cal wisely turned his equipment off. That would forestall followers, and he could snap the gear on and off at intervals until he came close to the site of the famous Hoard.

Benj swore as the signal ceased. But prior to its cessation, there had been a strong indication as to the relative motion of Cal's ship. He continued by extrapolation and went across the chord of the curve to intercept the other ship at some position farther along.

Tinker smiled openly. "Cal isn't ignorant," she said.

"Turning that thing off isn't going to help at all," responded Benj. "I've got Cal's original junk in the ship. I don't know the technique of finding the real Hoard, but I've been thinking that following the Key in Cal's ship might be possible. After all that's a cavity resonator too, you know."

"Sure it is. But if you can't follow the Hoard resonator, how can you follow Cal's?"

"Murdoch did something to his that makes it different," explained Benj. "What, no one has ever known until that brilliant brother of mine unraveled the code. But if the Hoard had been a standard resonator, people would have uncovered it long years ago. There's nothing tricky about getting a response from a resonant cavity."

Benj set the flier on the autopilot and went forward into the nose of the craft with tools. He emerged a moment later with a crooked smile. "All I had to do was to hitch up Cal's original junk. The detector is running as it always was, but now I can shoot forth a signal from Cal's equipment, stop it, and receive on my own detector. We had a fistful of duplicate Keys around the lab. We can't follow Murdoch's Hoard, but we can follow Cal—who is on the trail of Murdoch's Hoard."

He snapped a switch, and a thrumming whine came immediately. "That will be Cal's response," said Benj cheerfully. "No matter how he tries, he'll lead us to the spot."

Cal sped along in the thick white blanket of fog, not knowing that his own Key was furnishing a lead-spot for another. Had he known, it is possible that he would have stopped and had his argument when the other arrived, or perhaps he could have damped the resonator enough so that its decrement was short enough to prevent any practical detection of the response.

But Cal was admittedly no technician. He did not realize that his own resonator would become a marker. So he sped along through the white at a killing pace. He snapped the switch after some time and listened to the response from Murdoch's Hoard—as well as another signal that blended with his. The latter did not bother him as it might have bothered an engineer. Cal had no way of knowing what the results would be, and so he ac-

cepted the dual response as a matter of fact.

It was in the third hour of travel that the inevitable came. By rights, it should have come easily and quietly, but it came with all of the suddenness of two fliers running together at better than five hundred miles per hour.

Out of the whiteness that had blocked his vision all day, Cal saw his brother's black flier. It came through the sky silently, skirling the fog behind it into a spiral whirl. It came at a narrow angle from slightly behind him, and both pilots slammed their wheels over by sheer instinct.

The fliers heeled and cut sweeping arcs in the fog. Inches separated their wingtips and they were gone on divergent courses.

Cal mopped his brow. In the other ship, Benj swore roundly at Cal, and mopped his brow, too. And Tinker sat on the divan, letting her breath out slowly.

But Benj whipped the wheel around, describing a full, sharp loop in the sky. He crammed a bit of power on, and the tail of Cal's ship came into sight through the fog. Cal saw him coming and whipped his plane aside. Benj anticipated the maneuver and followed Cal around, crowding him close.

"What are you trying to do?" screamed Tinker, white-faced.

"Run him down," gritted Benj.

"Kill him?"

"No. He'll glide out of power if I can ram his tail."

He followed Cal up and over in a tight loop, dropping into an ear-drumming dive instead of completing the loop. Cal pulled out and whipped to the left, and Benj, again trying to anticipate the action, missed and turned right. Cal was lost again in the fog.

Cal waited for several minutes to see if he had really lost Benj, hoping and yet knowing that he had not. Yet there was quite a difference between knowing where he was and being within ten feet of his tail. In ten minutes, and one hundred miles later on the straightaway, Cal opened the throttle to the last notch and by compass streaked directly onto his former course.

Benj streaked after him, the resonator in operation, as soon as enough distance had been put between them for the gadget to function. Then Benj started to overhaul Cal's swift flier.

Meanwhile, Cal tried the Key. The answering signal indicated that he was approaching the site of Murdoch's Hoard, and not more than fifteen minutes later the direction indicator whipped to the rear. Cal had passed directly over it.

He circled in a tight hairpin turn and went back.

He forgot about Benj.

The black ship came hurtling out of the fog just a few feet to his right.

Before, they had been approaching on an angle, which had given both men time to turn. But now they were approaching dead on at better than six hundred miles per hour each. They zoomed out of the fog brushed wingtips and were

gone into the fog again, but not without damage. At their velocity, the contact smashed the wingtips and whirled them slightly around.

Like falling leaves they came down, and before they could strike the ground with killing crashes, they both regained consciousness.

Benj's ship was beyond repair. It fell suddenly, even though Benj struggled with the controls. It hit ground and skidded madly along the murky swamp, throwing gouts of warm water high and shedding its own parts as it slid. It *whooshed* to a stop, settled a bit into the muddy ground and was silent.

Cal had more luck. By straining the wiring in his ship to the burn-out point he fought the even keel back and came down to a slow, side-slippage that propelled him crabwise. He dropped lower and lower, and because there was nothing against which to measure his course, he did not know that he was describing a huge circle. His ship came to ground not more than a half-mile from Benj's demolished ship.

He set the master oscillator running in his ship and then put the field-locator in his pocket. No matter where he went, he could return to his own craft, at least. Then he stepped out of his flier to inspect the damage.

A roaring went up that attracted Cal's attention. He turned, and started to beat through the swamp towards the noise.

Light caught his eyes, and he came upon the burning wreckage of Benj's flier. Benj was paying no attention to the burning mass behind him, nor was he interested in Tinker Elliott. He was working over Cal's original equipment furiously, plying tools deftly and making swift tests as he worked.

Tinker was struggling across the ground of the swamp, pulling herself along with her hands. Her hips and legs were following limply as though they had not a bit of life. Her face was strained with the effort, though she seemed to be in no pain.

She saw him, and inadvertently cried: "Cal!"

Benj leaped to his feet, his hand swinging one of the three-foot welding irons. He saw Cal, and with his other hand he whipped out the needle beam and fired. The beam seared the air beside Cal's thigh. Cursing Benj tried again, but nothing came from the beam. He hurled the useless weapon into the swamp and came forward in a crouch, waving the welding iron before him.

Cal ducked the first swing and caught Benj in the face with a fist. It hurtled Benj back, but he came forward again, waving the white-hot, needle-sharp iron before him.

Cal couldn't face that unarmed. He dropped below the thrust, and his hand fastened on the matching iron to the pair that went in every flier repair-kit. He flung himself back, and came up in a crouch as his thumb found the switch that heated his own point.

Silently, their feet making soggy sounds in the swamp, Cal and Benj

crossed points in a guard of hatred.

Benj lunged in a feint, first. That started it. Cal blocked the feint swiftly and then crossed his iron down to block the real lunge that came low. While Benj recovered, Cal thrust and missed by inches. Benj brought the hot tip up and passed at Cal's face. Cal wiped the iron aside with a circular motion and caught Benj on the crook of the elbow. Smoke curled from the burn and Benj howled. It infuriated him and he pressed forward, engaging Cal's point. Cal blocked another thrust, parried a low swing, and drove Benj's point high. He dropped under the point and lunged in a thrust that almost went home. Benj dropped his white-hot iron and deflected the thrust. He jabbed forward as Cal regained his balance, and pressed forward again before Cal could get set.

The mugginess caught Benj's feet and slowed him. Cal was slowed too, but his backward scramble to regain balance was swifter than Benj's advance. The white-hot points made little circles in the foggy murk as they swung and darted.

Benj wound Cal's point in a circular motion and then disengaged to lunge forward. His point caught Cal in the thigh and the sear burned like live flame, laming Cal slightly. Cal parried, and then pressed forward with a bit of the fastest handwork Benj had ever seen. By sheer luck, Benj blocked and parried this encounter. The final lunge found Benj retreating fast enough to evade the thrust that might have caught him fair had he been slow in retreat.

He regained and forced Cal back. His dancing point kept Cal too busy blocking to counterthrust, and Cal fought a stubborn retreat. The ground behind him grew harder as he went back, and so he took a full backward step to get the benefit of hard, dry ground. He made his stand on the bit of dry knoll, and fought Benj to a standstill.

He fought defensively, waiting for Benj to come close enough to hit. Their irons danced in and out, and Benj circled Cal slowly. Part way around, Benj forced Cal's point up and rushed him. Cal backed away three steps—and tripped over Tinker's hips. He went rolling in a heap, curling his feet and legs up into his stomach.

Benj leaped over Tinker and rushed down on Cal, who kicked out with both feet and caught Benj hard enough to send him flying back.

Both men jumped to their feet, circled each other warily, waiting for an opening. Benj rushed forward and Cal went to meet the charge. The ring of the irons came again and the white-hot points fenced in and out.

Benj thrust forward, high, and Cal blocked him with the shaft of the iron. Their arms went up, shaft across shaft, and shoulder to shoulder they strived in a body-block.

"Steal my identity, will you?" snarled Cal.

"Destroy it," rasped Benj. "You've been asking for this."

Cal's mind flashed, irrelevantly, to books and pictures he had seen.

In such, the villain always spit in the hero's face in such a body-block. Cal snarled, pursed his lips and spat in Benj's face. Then with a mighty effort, Cal shouldered Benj back a full three feet and crossed points with him again.

Benj wiped his face on his shirt sleeve and raving mad, he drove forward, his point making wicked arcs. Cal parried the dancing point, engaged Benj in a thrust and counterthrust, and then with Benj's point blocked high, he drilled forward.

The white-hot point quenched itself in Benj's throat with a nauseating hiss.

Call stood there, shaking his head at the sight, and retching slightly. His face, which had been set like granite, softened. He dropped his iron and turned away.

"Tink!" he cried.

"Nice job, Cal," she said with a strained smile.

"But you?"

"I'm in no pain."

"But what's wrong?"

"Fractured vertebra, I think. I'm paralyzed from the waistline down. That crash—"

"Bad. Now what?"

"Where's your ship?"

"Back there a half mile or so," said Cal.

"Don't carry me," she warned as he tried to lift her. "Go back there and either bring it here or get something to strap me on."

"It'll take hours. The ship won't fly. I'll have to radio back to Northern Landing for help."

"I . . . won't last."

"You—" the meaning hit him then. "You won't last?"

"Not unless that vertebra is repaired."

"Then what can we do?"

"Cal . . . where's Murdoch's Hoard?"

"Nearby, but you're more important than anything that might be in Murdoch's Hoard."

"No, Cal. No."

"Look, Tink, you mean more to me than—"

"I know that, Cal. But don't you see?"

"See what?"

"What could possibly be of value?"

"No. Nothing that I have any knowledge of."

"That's it! Knowledge! All of the advanced work in neurosurgery is there. All in colored, detailed three-dimensional pictures with a running comment by Murdoch himself. Things that we cannot do today. Get it, Cal. It'll tell you how to fix this crushed spinal cord."

Cal knew she was right. Murdoch, in his illegal surgery had advanced a thousand years beyond his fellow surgeons who could legally work on nothing but cadavers or live primates while Murdoch had worked on the delicate nervous system of mankind itself. Murdoch's Hoard was a board of information —invaluable to the finder and completely unique and non-duplicative. At least until it was found.

"I can't leave you."

"You must . . . if you want me! I'm good for six or seven hours.

Go and get that information, Cal."

"But I'm no physician. Much less a surgeon. Even less a neurosurgeon."

"Murdoch's records are such that a deft and responsible child could follow them. According to history, his hoard is filled with instruments and equipment. Cal—"

"Yes?"

"Cal. *This is the place where Murdoch worked on living nerves!*"

Tinker Elliott closed her eyes and tried to rest. She did not sleep, nor did she feel faint. But her closed eyes were a definite argument against objection on Cal's part. Worrying, he left her and went back to his flier. He called for help and then he went to work on the Key.

Cal does not remember the next four hours. It was a whirling montage of dismal swamp and winking pilot lights and thrumming whistles. It was a lonely boulder with a handle on it that Cal lifted out of the ground with ease. It was an immaculate hospital driven deep into the murky ground of Venus. Three hundred and fifty years ago, Dr. Allison Murdoch worked here and today his refrigerating plants started to function as soon as Cal snapped the main switch.

On a stretcher that must have held many a torn and mangled set of nerves before, Cal trundled Tinker through the muggy swamp of Venus and lowered her into Murdoch's hospital.

In contrast, the next few hours will live forever in Cal's mind. He came to complete awareness when he realized that he did not know his next move.

"Tinker?" he asked softly.

"Here . . . and still going," she said. "Ready?"

Cal swallowed deep. "Yes," he said hoarsely.

"In that case over there . . . see it? Take an ampule of local—it's labeled Neo-croalaminol-opium, ten percent. Get a needle and put three cubic centimeters of it into space between the sixth and seventh cervical vertebra. Go in between four and five milimeters below the surface of the bone. Can do?"

"I . . . I can't."

"You must! How I wish we had a duplicator."

Cal shuddered. "Never."

"Well, I could show you how it's done on the duplicate, and then the duplicate could fix me up."

Cal gritted his teeth. "And which one would I dispose of? No, Tinker. It's bad enough this way!"

"Well, do it my way then!"

Cal fumbled for the needle and then with a steady hand he broke the glass ampule and filled the needle. "Is this still good?"

"It never deteriorates in a vacuum. We must chance everything."

Cal inserted the needle and discharged the contents. His face was gray.

"Now," said Tinker. "I'm immobilized completely from the shoulder blades down and can't harm myself. Cal, find the library and locate the reel that will deal

on vertebra and spinal operations."

"How do you know it is here" demanded Cal.?

"It's listed, in Murdoch's diary. Now quit arguing and go!"

"How come this diary isn't common knowledge"

"Because too many prominent people did not want their names mentioned as fostering Murdoch's surgery. Their offspring have never known about it and the medical profession has been keeping it under their hats so long that it has become a habit like the Px mark."

Cal located the library and consulted the card file. He returned with a reel of film. He inserted the reel into the operating room projector and focused it on the screen.

As the film progressed, Cal took the proper tools from the boiling water, and placed them on a sterilized carrier.

Then as Tinker instructed him through a system of mirrors, Cal lifted the scalpel and made his first incision.

With increasing skill, Cal applied retractors and hemostates and tweezers. Tinker kept up a running fire of comment, and the motion picture on the screen progressed as he did, with appropriate close-ups to show the condition of the wound during each step. Cal came upon the fractured bone as it said he should, and then though the fracture was not just as that in the picture, Call plied his instruments carefully and lifted the crushed bone away from the spinal cord. With a wide-field microscope, Cal

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inspected the cord.

"Can't tell, Tinker. I don't know anything about it."

"And I can't see it too well. Look, Cal. Don't touch it. It may be only bruised. Run the projector over to the replacing-operation and put the stuff back according to directions. If the cord is damaged, they can repair it at the Association. You'll be responsible for getting me there, anyway."

"All right," said Cal.

With tiny splints, Cal fastened the splintered bone back into place. It was as painstaking a job as putting a fine watch back together again, and as tedious as breaking the worst code in history. But Cal succeeded finally, and the final wrappings were placed by hands that were beginning to shake.

The plane from Northern Landing located them from Cal's master oscillator and came in for a landing. The official in the plane wasted no time. He ordered two of his helpers to install Tinker—stretcher and all—in his flier and they all took off after leaving a guard at Murdoch's Hoard.

Cal Blair headed up the walk from the gate to the front doors of the Association with a springy step. He headed in with determination, but was hailed by Tony Elliott. Tinker's brother grinned at Cal and shook his hand.

Cal tried to leave, but Tony kept him for a moment.

"For a guy that hates surgery and space flying and roistering around, Cal, you do all right."

"Look, Tony, I want to see Tink."

"I know. You haven't seen her since you brought her back six weeks ago, have you."

"No, and I intend to rectify that error right now."

"You could have been here three weeks ago."

"No, I couldn't. I've been in Vilanortis, working with the fellows on Murdoch's Hoard. After all, I'm not . . . not—"

"Not twins? No, thank the Lord! O.K., Cal. Go on in."

Cal left in a hurry, and Tony said to the receiving clerk: "He's changed."

Cal found Tinker in a wheelchair in the conservatory. "Tink!" he roared.

"Cal!" she answered. Then she arose from the wheelchair and came toward him with a light, eager step.

Cal was a gentleman—he met her halfway.

THE END.

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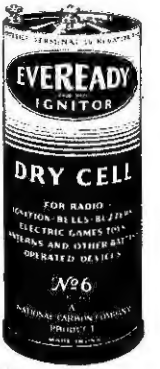

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